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ECONOMIC AFFAIRS

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The following selections from Soviet media on the aftermath of the Chernobyl Nuclear Power Plant accident and the mobilization of labor and technology in the clean-up effort will be published in the series USSR REPORT: POLITICAL AND SOCIOLOGICAL AFFAIRS under the subtitle AFTERMATH OF CHERNOBYL NUCLEAR POWER PLANT ACCIDENT. This is a representative list of the items selected for that report.

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

STRUCTURAL SHIFTS IN NATIONAL ECONOMY EXAMINED

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA EKONOMICHESKAYA in Russian No 2,
Mar-Apr 86 pp 32-45

[Article by M. N. Sidorov: "Structural Shifts in the National Economy of the USSR"]

[Text] The substance of the basic areas of modern USSR structural policy are revealed in the article along with the influence of sectorial structural shifts in the economy on production efficiency indicators. Problems in ensuring the structural balance of economic development are considered, including the coordination of the structure of employment with changes in fixed-capital reproduction indicators, growth rates and the structures of the processing and producing industries. A method for calculating structural production changes and the efficiency of fixed productive capital depending on the share of new equipment and the efficiency of machine building production is proposed. An analysis is given of structural shifts in the national economy in 1971-85 and those projected for the 12th Five-Year Plan.

The transition onto the rails of intensification, emphasized in the new version of the CPSU Program, requires serious structural changes in the economy of our country. The national economy should be rebuilt in a flexible and timely manner in accordance with progressive advances in science, equipment and technology and in individual and public needs. In this regard, it is essential to strengthen further the role of structural policy as one of the most important means of increasing production efficiency and accelerating the social and economic development of the country. The discussion concerns first and foremost a considerable increase in the share of capital investment directed toward the renewal of fixed productive capital, the reconstruction of existing enterprises and the creation and widespread application of resource-conserving technology along with a strengthening of the priority of individual areas of science and technology. In the broad view, structural policy consists of the most efficient distribution of economic resources (labor, material, capital investment) among various enterprises of social production with the aim of improving the pattern of production output and its fuller coordination with the changing makeup of productive and personal needs.

Rapid structural changes are characteristic of our economy. They are testimony to the advantages of a planned socialist economy, when the possibilities of large-scale maneuvers for the distribution and redistribution of resources among individual sectors and economic regions are fully realized. For the second half of the 1970s and the beginning of the 1980s, a major shift in the distribution of capital investment to the development of agriculture and sectors of the fuel and power complex was characteristic.

Thus, while the proportion of capital investment for the coal, petroleum and gas industries was a little more than 18 percent of the total amount of capital investment in industry in 1971-75, in 1984 it reached almost 30 percent. Twenty-two billion rubles were directed toward the development of the whole complex of agricultural operations in 1970, while 44 billion rubles were spent in 1984--a doubling in the face of a slower increase in the total amount of capital investment in the national economy.

The maneuvering of resources had its results--these economic complexes received powerful stimuli for development. The production of petroleum (including gas condensate) grew from 353 million tons in 1970 to 613 million tons in 1984, while natural gas grew from 198 billion to 587 billion cubic meters respectively. Gross agricultural output (in comparable prices) over this period increased from 108.4 billion to 135 billion rubles.

Table 1

Structural shifts and the dynamics of production efficiency indicators
1971-85, percent

	(1) Производительность труда			(2) Фондоотдача			Материаловое (3)		
	1975 к 1970 г. (4)	1980 к 1975 г. (5)	1985 к 1980 г. (6)	1975 к 1970 г. (4)	1980 к 1975 г. (5)	1985 к 1980 г. (6)	1975 к 1970 г. (4)	1980 к 1975 г. (5)	1985 к 1980 г. (6)
(7) Темп прироста показате- ля (в расчете по об- щественному продукту)	28,8	16,7	10,9	-11,6	-14,8	-13,4	2,3	-0,7	-0,4
(8) в том числе за счет изменения структуры	5,4	2,6	0,4	1,7	0,3	0,5	0,9	-1,3	-0,4

Key: 1--Productivity of labor; 2--return on investment; 3--materials consumptions; 4--1975 as a % of 1970; 5--1980 as a % of 1975; 6--1985 as a % of 1980; 7--rate of increase of indicator (calculated for the social product); 8--including through structural changes.

But this maneuvering of economic resources was accompanied by other consequences: the growth and renewal of fixed capital in ferrous metallurgy and machine building was delayed, the reconstruction of the light and food industries was slowed, storage and refining capacity in agricultural production was created insufficiently quickly and the material and technical base of industries in the area of turnover began to lag.

An increase in the share of resources directed toward a sector with a reduction in the efficiency of their utilization cannot lead to the projected structural shifts in production output. A persistent decrease in the indicators of labor, funds and material consumption of the output produced (without losses in its quality) increases the possibility of purposeful changes in production patterns and the conducting of economic maneuvering with the redistribution of resources among sectors and regions.

Thus, the surpassing of the production growth rate of products of the 1st subdivision compared to the 2nd subdivision turns out to be more essential the less efficient the newly created labor means are. Conversely, with a rapid growth in productivity, the economy of labor means and increasing production efficiency overall, real preconditions are created for the acceleration of the production of demand articles and the corresponding change in the proportion between the 1st and 2nd subdivisions of social production.

The plan for the development of the national economy in the 12th Five-Year Plan envisages the rapid growth of the production of demand articles in industry (22-25 percent) compared to the increase of production equipment (20-23 percent). The acceleration of scientific and technical progress and the increase in the efficiency of new equipment create the necessary preconditions for this.

Structural shifts in the national economy have an influence on the dynamics of production efficiency indicators. Thus, the productivity of social labor can grow through its increase in all sectors of the national economy, as well as through increasing the share of sectors with a higher level of labor productivity in the composition of the social product and national income. We will consider the influence of structural factor on changes in labor productivity, return on investment and material consumption of social product (see Table 1).

In the 11th Five-Year Plan, changes in the sectorial structure of the national economy had a lesser effect on the dynamics of production efficiency indicators than in the 9th and 10th Five-Year Plans, which testifies to the slowing of structural economic changes.

The positive influence of structural changes in the social product on the dynamics of labor productivity are basically associated with the increase in the share of industry, where the level of labor productivity calculated for gross production is higher than in other sectors of the national economy. In the 11th Five-Year Plan, this factor had an insignificant influence, and the increase in labor productivity in the national economy was facilitated by its growth in all sectors. In the 10th Five-Year Plan, had structural shifts not occurred, labor productivity (according to social product) would have grown by 14.1 percent rather than 16.7 percent. In the 9th and 10th Five-Year Plans, labor productivity in industry grew at a greater rate than in agriculture, while for the 11th Five-Year Plan the reverse relationship was characteristic: labor productivity in agriculture increased at a greater rate than industry.

Structural shifts somewhat hindered the reduction in the return-on-investment indicator. The efficiency of the utilization of fixed productive capital,

however, has a tendency toward reduction, and while the rate of reduction of return on investment in agriculture declined, in industry, on the other hand, it grew. Return on investment declined by 5.3 percent in industry and 3.4 percent in agriculture in 1971-75, by 13.7 percent and 27.6 percent in 1976-80, and by 14.6 percent and 16.8 percent in 1981-85 respectively. The contribution of agriculture in reducing the economic indicator for return on investment declined from 9.5 percent in 1971-75 to 3.8 percent in 1981-85; over this same period, the contribution of industry grew from 2.8 percent to 7.8 percent.

The decline of almost 60 percent in the efficiency of utilization of fixed industrial productive capital in the 11th Five-Year Plan caused a reduction in the corresponding economic indicator taken in percent. Return on investment declined not only in the producing sectors of industry, but in the processing sectors as well, including machine building, chemicals and petrochemicals. The growth in the contribution of industry to the negative dynamics of the economic return-on-investment indicator testifies to the fact that the scientific and technical progress factor not only did not neutralize the objectively worsening conditions of production activity in the producing complex and in agriculture, but also operated with decreasing efficiency in its primary sphere--the machine-building, chemical and petrochemical sectors.

The material consumption of industry output is more than 20 percent greater than the material consumption of social production taken in percent. The remaining sectors of the national economy have even lower material consumption in industry production than average for the economy. Therefore, the increase in the share of industry in the structure of the social product led to a negative contribution of the structural factor on the dynamics of the material consumption of the social product. The rapid reduction in the material consumption of industry output in the 10th and 11th Five-Year Plans, however, compensated for this structural factor, and the material consumption of social product had a trend toward decline.

Compared to the labor productivity and return-on-investment indicators, structural shifts have a more substantial effect on the material consumption indicator for social product. Their contribution to the formation of the overall dynamics of the indicator can exceed the amount of changes in material consumption in the sectors themselves. Thus, the increase of the share of gross industrial output in the social product of 3 percentage points side by side with an increase in the material consumption of agricultural output and construction led to a growth of material consumption for the social product in the 9th Five-Year Plan, even in the face of a decline of 0.4 percent in material consumption in industry. The slowing of the increase in the proportion of industry in the social product in 1976-85 led to the fact that the reduction in material consumption in industry and construction, notwithstanding the growth of this indicator in agriculture and transportation, led in the end result to a reduction of material consumption for the social product in comparable prices (in current prices material consumption is increasing).

Material consumption in agricultural production increased at a growing rate from five-year plan to five-year plan: the rate of increase was 13.4 percent in 1971-75, 18 percent in 1976-80 and 22 percent in 1981-85. To a great extent, this was facilitated by the rapid growth in amortization deductions.

A change in the sectorial structure of industry occurs on the side of an increase in the labor and capital consumption of production overall. In the long run, this negative effect of structural shifts will decrease through the renewal of the productive apparatus of the processing sectors of the economy, the comprehensive utilization of raw material and its more thorough refining, and the acceleration of the recoupment of new equipment and capital investment overall. The implementation of an efficient structural policy will occur based on a reduction of the "science--production" cycle, a growth in the economy, reliability and productivity of new machinery and equipment, and an increase in the efficiency of the investment process in the national economy.

Progressive structural changes are an essential component of economic development. Under modern conditions, the effect of the structural factor on the efficiency and rate of social production is growing. It is necessary to ensure a fuller structural correspondence between the principal factors of production--labor resources and productive capital. In the 1960s and 1970s, the rapid development of industry was ensured both through the growth of labor productivity and by way of the application of labor resources freed up from agriculture for work at new enterprises. The rate of increase in labor resources is now declining substantially and the number of those employed in agriculture in a whole number of economic regions of the country is stabilizing, and therefore the development of industry can be implemented only on the basis of the rapid incorporation of scientific and technical achievements and the structural rebuilding of production. This in its turn is closely associated with the creation of an efficient mechanism for the freeing up of labor resources according to plan, especially through the incorporation of the automation of production and the mechanization of manual labor and their application to new and expanded enterprises.

In the 11th Five-Year Plan, changes in the employment pattern in the national economy occurred under the influence of the trends that resulted in the 1960s and 1970s. The share of those employed in material production declined from 73.2 percent in 1980 to 72.5 percent in 1985, that is, by 0.7 of a percentage point. For comparison, this reduction was 1.7 percentage points in the 9th Five-Year Plan and 1.3 in the 10th. The intensiveness of structural shifts between those employed in the productive and non-productive spheres in the 11th Five-Year Plan was somewhat reduced in this manner. Changes in the structure of employment in the sectors of material production have also slowed in recent years.

A generalized representation of the speed of structural changes produces a coefficient of structural changes, which is determined as the half-sum of the absolute values of the differences of the proportions of sectorial indicators in the economic ones at the beginning and end of the period under consideration. The structural change coefficient for employment, calculated by economic sector, was 2.3 in the 9th Five-Year Plan, 2.0 in the 10th and 0.9

in the 11th. The structure of employment in 1985, consequently, differs from the structure of employment in 1980 by 0.9 percent, and correspondingly by 2.0 percent in 1980 from 1975 and by 2.3 percent in 1975 from 1970.

In the structure of employment in industrial production, the share of those employed in machine building and the chemical and petrochemical industries grew while the share of those employed in the light, food, timber, woodworking and cellulose-paper industries declined. The trends of structural change in industrial production correspond to the change in the sectorial structure of employment in industry. This testifies to the fact that a change in the structure of industrial production is implemented under the influence of extensive factors, and not only through the rapid increase of labor productivity in priority sectors and types of production.

The share of those employed in industry of the total number of those employed in material production is lower than the proportion of gross industrial product in the social product (42 percent and 66 percent respectively in 1984), while in agriculture and construction the inverse relationship is projected (24 percent and 11 percent; 12 percent and 10 percent respectively). This indicates the higher level of labor productivity in industry compared to agriculture and construction. This is facilitated to a certain extent by the differentiation in the level of capital-labor ratio: thus, in 1984, with the indicator of capital-labor ratio in material production taken as a percent, the relative level of the capital-labor ratio was 119 percent in industry, 78 percent in agriculture and 42 percent in construction. For comparison, the capital-labor ratio in agriculture in the United States is higher than the corresponding indicator in the processing industry. Thus, in 1980 the capital-labor ratio in agriculture in the United States exceeded the corresponding indicator in the processing industry by 1.7 times, along with 1.4 times in machinery available per unit. It is apparent that our capital-labor ratio in agriculture should grow at a rapid rate, but with a growth in the quality of agricultural equipment and its rational operation along with an increase in the share of capital investment directed toward the creation of the productive and social welfare infrastructure.

Notwithstanding the considerable shortage of workers, especially at enterprises started up in recent years, an exceedingly large share of manual labor is preserved at the same time in both basic and auxiliary production. The substitution of human labor is embodied in the mechanization and automation of production and the elimination of non-prestigious and low-skilled jobs--this is a most important structural shift in the economy that ensures its balanced and efficient development.

In order to resolve this problem, it is projected approximately to double the level of production automation in the 12th Five-Year Plan. It is envisaged that manual labor will be reduced at a faster rate than in the 11th Five-Year Plan. The task has been posed of reducing the share of manual labor in the sphere of production to 15-20 percent by the year 2000. In the 12th Five-Year Plan, the entire increase in the national income should be ensured through increasing the productivity of labor.

The structural correspondence between labor resources and fixed productive capital can also be ensured by the more rapid renewal of production apparatus, a reduction of the share of new construction in capital investments and the expansion of enterprises and a corresponding increase in the proportion of funds directed toward the technical retooling and reconstruction of existing capacity.

Accelerating the practical realization of the achievements of scientific and technical progress is closely connected not only with strengthening priorities in the development of individual sectors, subsectors and types of production, but also with increasing the share of newly issued production funds and demand articles; that is, the more rapid renewal of manufactured product. This requires an increase in the turnover rate of fixed productive capital, and first and foremost its real portion.

The core of modern structural policy is the qualitative structural transformation of existing productive potential. Fixed productive capital in our country now totals 80 percent of the U.S. level, and the level of labor productivity is 40 percent. The renewal of fixed capital on a new scientific and technical basis is a fundamental material precondition for achieving an increased level of labor productivity. The reproductive structure of capital investment will be changed radically for this. Currently only 20 percent of productive capital investment is expended in practice on the replacement of withdrawals and the renewal of fixed productive capital, and the rest of investment goes toward increasing the amount of capital. Both in the process of technical retooling and in the reconstruction of enterprises, a considerable increase in fixed capital occurs, which in the end result is determined by the resultant irrational reproductive structure of capital investment.

As the practice of recent years demonstrates, the inertia of the distribution structure of capital investment cannot always be overcome. What is the matter here? The extant management mechanism in the investment sphere leads to a continuous expansion of the construction-work front, an increase in the amount of facilities under construction at the same time and, consequently, to a lengthening of enterprise construction times. Under these conditions, a growing amount of capital investment is needed in order to continue the newly started construction, but at the same time an increase in the amount, as well as the proportion, of capital investment directed toward the technical retooling and reconstruction of existing production is required. The way out of this is both the improvement of the economic mechanism for the realization of capital-investment plans and more precise monitoring by planning organs of the amount and estimated cost of facilities newly under construction.

In recent years, with an insufficient level of renewal of all of the productive apparatus, mobile equipment has been removed from operation at a relatively rapid rate in agriculture, construction and transportation, which was facilitated by its low quality and the not always rational conditions of operation. At the same time, the basic process equipment of the processing sectors of industry, upon which the quality and renewability of finished industrial output depend to a decisive extent, was withdrawn and replaced more slowly than dictated by the modern rate of scientific and technical progress.

In the long run, a change in the structure of the productive apparatus should be connected with an acceleration of the renewal of permanent process equipment on a new scientific and technical basis, which will permit an increase in the completeness of the refining of material resources, a sharp reduction in their losses, an increase in quality and an expansion of the mix of product output.

In the 12th Five-Year Plan, half of the total amount of productive capital investment will be directed toward the reconstruction and technical re-equipping of existing enterprises, and the technological structure of capital investment will be improved substantially.

The distribution and redistribution of capital investment among various sectors and regions is the most active means of structural policy. Favorable possibilities are created for economic growth under conditions of an increase in the efficiency of capital investment and the implementation of a differentiated policy for its distribution.

A change in the sectorial proportions of capital-investment distribution, balanced with the corresponding intersectorial redistribution of labor and material resources, leads to an increase or decrease in the proportions of individual sectors in the fixed productive capital structure and afterward, with a steady return-on-investment indicator, to a change in the sectorial structure of production output. The degree of correspondence between sectorial shifts in the distribution of capital investment and changes in the structure of fixed productive capital and production output is determined by a comparison of the structural-shift coefficients.

The greater the value of this indicator, the more intensive the structural changes are implemented in time, when the structural-shift indicator is not equal to zero. A comparison of the dynamics of the indicator over various periods of time indicates the distinction in the degree of intensiveness of structural change in those spaces of time. A study of the interconnection of the intensiveness of structural shifts (in sectors, regions) with the dynamics of the production-efficiency indicator and an intersectorial and interregional comparative analysis conducted on this basis testify to the reserves of efficiency growth associated with this or that degree of movement in the structure of production and the distribution of resources.

A comparison of the structural-shift coefficients, calculated by capital investment proportion per sector, fixed productive capital and production output over a sustained period of time indicates, for example, to what extent the initial impetus for a change in sectorial priorities in capital-investment distribution was transformed into corresponding shifts in the sectorial structure of production output. The efficiency of the structural investment policy is greater when the divergence of the structural-shift coefficient of capital investment and the coefficient of change in production structure, calculated with a lag of 3-5 years, is less. The consequences of the structural investment policy here fully conform to the projected changes in, for example, the ratio of the consumption and accumulation funds in the national income.

Table 2

The structure of productive capital investment and fixed
productive capital in 1971-85

	(1) Капитальные вложения			(2) Основное фонды, %			
	1971— 1975 гг.	1976— 1980 гг.	1981— 1985 гг.	1970 г.	1975 г.	1980 г.	1985 г.
(3) Всего	100	100	100	100	100	100	100
(4) в том числе:							
(5) промышленность	48,4	47,6	47,9	48,0	47,8	48,2	48,4
(6) сельское хозяйство	27,8	27,3	25,8	20,0	20,8	20,7	20,5
(7) строительство	5,3	5,4	5,3	4,2	4,4	4,8	5,1
(8) транспорт и связь	14,9	16,1	16,8	22,0	21,2	20,6	20,5
(9) сфера обращения и пр.	3,6	3,5	4,2	5,8	5,8	5,7	5,5

Key: 1--Capital investment; 2--fixed capital, %; 3--total; 4--including: 5--industry; 6--agriculture; 7--construction; 8--transportation and communications; 9--circulation and other.

The distribution of capital investment among sectors is closely connected with the intersectorial conjugacy of the development of each sector and with the choice of high-priority, leading sectors. The delineation of leading sectors depends first and foremost on the level of economic development, cumulative potential and on the degree of satisfaction of public and personal requirements for the products of this or that sector. At each stage of development, priority in the distribution of capital investment is given to sectors: that are on the cutting edge of scientific and technical progress; the products of which are used in the majority of sectors of the national economy and facilitate the reduction of macroeconomic indicators of labor, capital and material consumption; in which, over short time intervals, it is possible to manufacture products that can compete in the world market; and, where the degree of divergence between the volume of production and the economic requirement for the given product is the greatest.

The ratio of capital-investment distribution among sectors of the national economy in 1971-85 is characterized by great stability. The sectorial ratios of fixed productive capital also changed comparatively slowly (see Table 2).

In the 1970s, the share of capital investment directed toward industry had a tendency toward decline, which made it possible for productive potential to grow at a more rapid rate and accelerated its renewal in other sectors of the national economy. In the 11th Five-Year Plan, the proportion of investment in industry increased somewhat, and the share of fixed productive capital in its total volume grew as well. The tendency was manifested as a reduction in the share of fixed capital in transportation, communications, trade, castings and material and technical supply in the total amount of fixed productive capital, even though the proportion of capital investment directed toward these sectors increased. In industry, on the contrary, the share of fixed capital had a tendency toward increase (from 48.0 percent in 1970 to 48.4 percent in 1985),

and the share of capital investment was reduced to 47.9 percent in 1981-85 from 48.4 percent in 1971-75. It is also taken into account that as applied to the conditions of 1985, 1 percent of capital investment in absolute terms corresponds to 1.6 billion rubles, while 1 percent of fixed productive capital is 15.2 billion rubles. Thus, a relative change of 1 percent in the structure of fixed productive capital is in absolute terms almost 10 times greater than a relative change of 1 percent in the structure of annual capital investment.

Therefore, an increase of 1 percent in the coefficient of fixed productive capital withdrawal leads to a growth of up to 10 percent of the annual amount of capital investment in the share of capital investment directed toward the replacement of withdrawals and the renewal of capital.

In recent years, the structure of capital-investment distribution by industrial sectors is found to be under the determining influence of the increase in the share of capital investment directed toward the fuel and power complex. This made it impossible to increase the share of capital investment for other industrial sectors and (with an almost stable share of investment in agriculture) led to a decrease in the proportion of the total amount for non-productive capital investment. Machine building is the sole sector among the industrial sectors besides the fuel sectors where the share of capital investment increased somewhat in 1971-85.

While the proportion of capital investment in the coal, oil and gas industries was 18.3 percent, and machine building was 22.3 percent, of the total amount of capital investment in industry in 1971-85, in 1985 the picture had turned around: 29 percent was in the fuel sector and 25 percent in machine building. The share of the fuel sector in industrial output, moreover, shows a clear trend toward decline.

A reduction of 7-9 percent in power consumption in the national income by 1990 is envisaged in the 12th Five-Year Plan. The country's growing requirements for fuel and energy will be satisfied chiefly through the economizing of fuel and energy resources and the accelerated development of nuclear power, the gas industry and the production of coal by the open-mining method.

Structural shifts should also be implemented in the technological sphere. A more rapid transition from multiple-operation to simplified-operation technology is necessary. The multiple-operation, narrowly specialized technology with many reworkings that exists in many processing sectors of industry has already exhausted its possibilities both from the point of view of improving the quality of product output and from the aspect of increasing the efficiency of production overall. Increasing the number of stages of reworking of material resources usually leads to the creation of additional jobs and an increase in the burdens on the transportation system. These limitations facilitate the necessity of a transition to the combination of individual technological operations and the creation and mass application of simplified-operation technology. In machine building, this is the creation of aggregate machine tools and processing centers, in ferrous metallurgy it is production without blast furnaces, in mining it is stoping and tunneling combines, in the lumber industry it is machinery that carries out the felling

of trees, the trimming of branches and the stacking of logs, as in agriculture it is harvest machinery with detachable tools for the execution of various agricultural operations.

Improving the structure of productive apparatus and the composition of applied technology should be interconnected. The discussion concerns the design, production and broad-scale utilization of those technological systems, machinery and equipment that ensure the comprehensive and effective processing of material resources at all stages of the economic technological process, from the production of the raw material to the receipt of finished products, and on this basis to raise the productivity of labor.

Therefore, a fundamental area for the development of the machine-building complex should be the complete-unit production of machine-building products that go not for the replacement of individual machine tools and types of equipment, but rather replacing entire links in the technological process or the technological process overall. For this it is necessary to reconstruct the administration of the machine-building complex along the lines of creating large machine-building scientific production associations with a radiating network of specialized branches and shops, where production should be oriented toward the orders of consumer-clients for the creation of fundamentally new technological systems of machinery and equipment.

The radical reconstruction and rapid development of the machine-building complex, and first and foremost machine-tool and instrument building and the electrical and electronic industries, will be provided for in the 12th Five-Year Plan. With an increase of 21-24 percent in the output of industrial products, the amount of machine-building production will increase by 40-45 percent, while the rate of increase of priority subsectors of the machine-building complex will surpass the average rate of increase of machine-building products by 1.3-1.6 times. This will create the necessary preconditions for accelerating scientific and technical progress and implementing the structural rebuilding of the economy.

Improving the structure of the production apparatus will be based on a considerable increase in the share of fully mechanized and automated enterprises in the total number of industrial enterprises. Their share currently totals almost 14 percent, and with roughly the same proportion of the number of workers, these enterprises produce more than 23 percent of industry output. The level of labor productivity at the given enterprises is 2-4 times greater than ordinary ones. With a higher capital-labor ratio at fully mechanized and automated enterprises, a tendency for growth in return on investment is clearly manifested. Potential reserves for return on investment growth are restrained here by low indicators of shift-system equipment operation and insufficient raw materials and materials subject to processing.

Increasing the proportion of fully mechanized and automated enterprises is also a most important factor in increasing the technical level of production and raising its technological working conditions--bases for raising the quality of production. This has special significance for regions with a strained balance of labor resources, the regions of Siberia and the Far East. In the eastern regions and Siberia, electric-power engineering, the production

of fuel and power resources, ferrous and non-ferrous metallurgy, and the chemical and cellulose-paper industries are receiving priority development. The efficiency of mass multi-ton production in these sectors will increase rapidly through the utilization of continuous and automated technological processes.

It should be taken into account that the creation of modern flexible automated production systems requires expensive equipment. In 1983, the average machine tool with numerical control cost 53,000 rubles (the average price of one metal-working machine tool was 2,400 rubles in 1960, 4,400 in 1970 and 10,600 in 1983). The experience of overseas firms testifies to the fact that progressive but expensive new equipment, a component of flexible production systems, produces a significant economic saving just under conditions of a continuous around-the-clock mode of operation. Only in this case is the potential saving of such equipment realized and its rapid recoupment ensured. On the other hand, the distribution of expensive new equipment among a large number of enterprises with a low shift-work equipment operation coefficient leads to a considerable disparity between the real saving of the new equipment from the potential one and in the end result to an increase in the capital requirements of production and--through amortization deductions--to an increase in the cost of the products.

Increasing the share of capital investment directed toward the machine-building, chemical and petrochemical industries and electric-power engineering undoubtedly facilitates the acceleration of scientific and technical progress in the national economy. But today it is impossible to approach the problems of structural policy in such a simplified fashion. Accelerating the growth of machine-building production based on the circulation of well-known models of machinery and equipment and on the rapid growth of expenditures and prices for new equipment compared to its technical and economic parameters will not only produce an economic saving, but will also extract resources from other spheres of social production. Machine building now requires one third of all rolled metal, two thirds of steel sheet and more than 60 percent of forgings and stampings.

Therefore, the traditional priorities in sector distribution of capital investment should be supplemented to a great extent in the area of increasing the amount of capital investment in progressive, leading production technologies in every sector of the national economy and for the renewal of production apparatus and the creation of fully mechanized and automated enterprises.

Within the boundaries of the resultant intersectorial complexes, the center of gravity should be transferred to the development of finish production with the corresponding redistribution of investment resources. In the fuel and power complex, this is expansion of the production of petroleum and the ever greater utilization of oil and gas as raw materials for the chemical industry. In metals mining, this is the accelerated growth of metals distribution itself and the expansion of the range of rolled metal. In the timber complex, the tilt should be toward efficient and extensive processing of all prepared timber and increasing the output of finished products.

In this regard, the methods of calculating the utilization efficiency of machine-building products in the consumer sectors require improvement. With an increase of the share of capital investment directed toward the technical re-equipping and reconstruction of existing enterprises, the interconnection between the development of machine building and changes in the structure of the products produced increases in all sectors, where the substitution of the active portion of fixed productive capital by new types of machinery and equipment is implemented.

With otherwise equal conditions, the ratio of the increase in national income to the increase in fixed productive capital will be the greater, the more efficient the new capital is compared to that functioning and the greater the share of new equipment in the overall introduction of fixed capital. The equation

$$E = E_1 + d(E_n - E_1),$$

is true, where E is the ratio of the increase in national income to the introduction of fixed productive capital; E^T is the efficiency of the traditional equipment, measured as the ratio of the portion of increase in national income created with the aid of traditional equipment to the increase in the amount of this equipment in the overall introduction of fixed productive capital; E^H is the efficiency of the new equipment, measured as the ratio of the remaining portion of the increase in national income created with the aid of the new equipment to its amount in the overall introduction of fixed productive capital; and, d is the share of new equipment in the introduction of fixed productive capital.

In this manner, the indicators E^H and d determine the prospective dynamics of increased return on investment. The product $E^H \times d$ can be interpreted as an integral characteristic of materialized scientific and technical progress. It increases to the extent of the increase in efficiency and the scope of application of new equipment. Therefore, the indicators of new equipment efficiency and its share in the introduction of fixed productive capital (or in the amount of capital investment) should be at the center of attention in the development of prospective development plans for all sectors of the national economy, insofar as it is namely their dynamics that characterize the possibilities for scientific and technical progress that can be realized in the national economy with the aim of accelerating socio-economic development and improving the structure of production.

The dynamics of return on investment are determined not only by the efficiency of newly introduced capital, but also by the utilization efficiency of existing productive apparatus. The rate of increase in return on investment (T_f) can be represented in the following formula:

$$T_f = \sigma \left(\frac{E_1 + d(E_n - E_1)}{f} - 1 \right),$$

where f is return on investment calculated as the ratio of national income to fixed productive assets and σ is the share of increase in fixed productive capital of its total amount at the end of the period.

A change in the rate of increase in return on investment is also determined, in this manner, by the dynamics of the indicator f of average return on investment that characterizes the utilization efficiency of the cumulative amount of fixed productive capital.

The share of new equipment in the composition of fixed productive capital placed in operation and the indicators of its efficiency are parameters that determine the dynamics of return on investment. Based on data on the prospective growth rate of capital investment, it is possible to calculate various versions of return-on-investment dynamics depending on the indicators of the share of new equipment in fixed productive capital placed in operation and its efficiency, producing in the same manner economic requirements for efficiency and the scope of realization of the achievements of scientific and technical progress. Increasing efficiency in the development and improvement of the structure of the national economy is indissolubly linked to the amount of production of machine-building products and the efficiency of its utilization in the consumer sectors. Also, taking into account the sectorial principle of economic management, economic requirements for scientific and technical progress can be realized in planning practice by establishing long-term standards for the efficiency of newly created equipment for all subsectors of machine building that supply machinery and equipment for the corresponding sectors of the national economy and industry. The indicators of increase in the efficiency of fixed productive capital that we considered can be represented in the following manner:

$$E_T = \frac{\Delta N_T}{\gamma B_T} = \frac{1}{\gamma} \sum_{i=1}^n E_{Ti} b_{Ti}$$

$$E_H = \frac{\Delta N_H}{\gamma B_H} = \frac{1}{\gamma} \sum_{i=1}^n E_{Hi} b_{Hi}$$

where γ is the ratio of increase in fixed productive capital to gross machine-building output; B_T and B_H are the traditional and new products respectively of machine building in the make-up of the overall amount of machine-building production ($B = B_T + B_H$); $i = (1, \dots, n)$ is the index of the sector of the national economy and the corresponding subsector of machine building that supplies products for the given sector; n is the number of sectors of the national economy and subsectors of machine building; E_{Ti} and E_{Hi} are the efficiency of traditional and new machine-building products in sector i ; b_{Ti} and b_{Hi} are the share of traditional and new machine-building products of subsector i in the total volume of traditional and new machine-building products respectively, where moreover

$$\sum_{i=1}^n b_{Ti} = 1; \quad \sum_{i=1}^n b_{Hi} = 1.$$

For every subsector of machine building that supplies its products to a corresponding sector of the national economy and industry, an efficiency indicator is set that characterizes the ratio of the increase in products produced in the sector to the expenditures on the production of machine-building products. Where $E_H > E_T$, $E_{T+1} > E_T$ is fulfilled; that is, the efficiency of production is growing.

The dynamics of return on investment can be determined in this case as

$$\tau_j = \sigma \left\{ \frac{\frac{1}{\gamma} \left[\sum_{i=1}^n F_{ji} b_{ji} + d_i \left(\sum_{i=1}^n E_{ji} b_{ji} - \sum_{i=1}^n E_{ji} b_{ji} \right) \right]}{I} - 1 \right\},$$

where d is the share of new products in machine-building subsector i .

The efficiency of fixed productive capital, in this way, increases to the extent of increase in the share of new machine-building products and the growth of its efficiency in all consumer sectors and the extent of the efficiency of the new equipment over the traditional. The embodiment of existing and reliably forecast achievements of scientific and technical progress in machine-building products, initially taking into account the efficiency indicators of machine-building products by sector, can serve as a reliable basis for forecasting the efficiency indicators of economic development. The prospective values of the indicators E_{ji} and d_i should serve as orientation points (or standards) in planning and creating prototypes of new equipment and its circulation through series production. Calculations of E_{ji} are based on the development of alternative versions of equipment development (the discussion should concern not individual machinery and types of equipment, but the system of machinery, equipment, apparatus, instruments and means of transportation that embody new highly efficient technology and determine the new technical and economic level of production in consumer industries), and the indicator d_i is determined by taking into account the development and technical retooling of productive apparatus in the machine-building subsectors. The selection of this or that function for determining the prospective values of these indicators can ease the calculations, but their trustworthiness depends on the reliability of sectorial scientific and technical information on the efficiency of individual areas of scientific and technical progress in the future. The grounding of the indicators E_{ji} and d_i can be expediently implemented, in our view, in the development of a comprehensive program of scientific and technical progress, while in fundamental areas and five-year plans, the development of the economy can be formulated as targets for the corresponding machine-building sectors and the lead scientific research organizations.

Alongside the improvement of the structure of employment, fixed capital and the acceleration of scientific and technical progress, modern structural policy presupposes substantial shifts in the assortment of construction materials and in the production of material resources overall. The material expenditures recovery fund in the composition of the social product exceeds the size of the national income. The scale of material-resource turnover in the national economy, determined by the amount of current material expenditures, is more than 5 times greater than fixed productive capital turnover calculated as the sum of its withdrawal and increase. The absolute size of the saving from modernization of the structure of utilizable material resources is therefore also large. The reliability and durability of fixed

capital are determined in the end result by the quality of the objects of labor, semi-manufactures and component products of which they are manufactured.

In recent years, the rate of increase in the output of means of labor has surpassed the dynamics of growth in the production of objects of labor. This process was not always accompanied by expansion of the processing of mineral resources and their comprehensive utilization, which led in its turn to the underutilization of productive capacity in the processing sectors of industry. In order to ensure the balanced development of the producing, raw-material sectors with processing production, the creation and incorporation of resource-conserving technology will be accelerated in the 12th Five-Year Plan. The resolution of this task is expediently divided into two stages. In the first, it is necessary to provide for effective mass broad-scale incorporation, rather than at individual "indicator" enterprises, of technologies already existing in scientific work in progress.

It is no secret that a priority for Soviet science is the creation of a whole series of fundamentally new and economical technologies. And its broad incorporation at the enterprises of this or that sector is dragging out over many years. Thus, in ferrous metallurgy the share of continuous casting of steel is now no more than 15 percent, and this method, by the way, ensures a saving of up to 20 percent of cast metal and allows an increase in its strength characteristics. More than ten years ago, Soviet scientists developed an economical technological process for obtaining high-molecular-weight polyethylene, widely utilized in the production of paper and building materials and the rubber industry. But it has still not been incorporated into production, and the preparation is obtained abroad. Many such examples, unfortunately, can be cited. Therefore, reserves for conserving material resources through the mass utilization of already known progressive technological methods are enormous.

The second stage in the creation and incorporation of resource-conserving technologies is associated with the development of basic science. Its discoveries should aid in overcoming limitations in natural resources for the development of social production over the long term. Revolutionary advances will be needed here along with fundamentally new technologies that would not only facilitate the conservation of materials, but also permit the efficient substitution of artificial materials with predetermined features for natural materials.

An improvement in the structure of fixed capital in a complex with structural materials will be implemented in the 12th Five-Year Plan with the aim of accelerating the output of progressive types of products. Thus, in ferrous metallurgy, the melting of oxygen-converter and electric-furnace steel will increase by 1.3-1.4 times by 1990 compared to 1985, the casting of steel by the continuous method by no less than 2 times, and the output of cold-rolled sheet, heat-strengthened rolled metal and coated sheet will increase considerably. In the face of an overall increase of 30-32 percent in the amount of production in the chemical and petrochemical industries over the five years, the production of polymerized types of resins and plastics will increase at a greater rate. The building-materials industry is oriented

toward the creation of economical frame-and-panel structural elements, cement-particleboard slabs and aluminum structural elements. In the timber, woodworking and cellulose-paper industries, the production of paper, boxes and wood slabs will grow at a rapid rate compared to the amount of lumbering, and the utilization of wood by-products will increase sharply.

A saving in current materials consumption can be implemented by still another important structural maneuver in the development of the national economy--directing a larger amount of material resources toward increasing the accumulation fund in the national income so as to ensure a balanced increase in fixed productive capital and materials that undergo processing into finished products.

The proportion of secondary raw materials will increase to the extent of the growth in the scope of production and the acceleration of the renewal of fixed capital in the structure of raw-material resources. In the developed capitalist countries, for example, the share of waste paper in paper and box production reaches 50 percent, and approximately 60 percent of copper production is covered through its extraction from copper by-products. Increasing the share of secondary resources in the total volume materials consumption permits in its turn the implementation of a structural rebuilding in the distribution of capital investment.

With the appropriate strengthening of the material and technical base of the services for the collection and preliminary processing of secondary resources, a certain share of the capital investment directed toward the production sectors for increasing the production of primary resources and raw materials can be utilized for resolving social questions, accelerating the construction of housing and developing the non-productive sphere overall.

Improvement in the structure of structural materials and the more comprehensive processing of natural resources facilitates improvement in the dynamics of the return-on-investment indicator. Products can be manufactured with much better technical and economic parameters from higher quality materials, semi-manufactures and component articles. Frequently the most progressive designs cannot be realized due to the lack of appropriate materials. Furthermore, the capital requirements of the additional products that are produced as a result of the more extensive processing and increased completeness of utilization of natural raw materials are substantially lower than the capital requirements for increasing the output of the producing industry. Capital requirements in the production of oil, for example, are almost 4 times greater than petroleum refining, and the capital requirements of iron-ore and mineral production are double those for the output of their processing.

The activization of structural policy, a clear designation of priorities in the distribution of capital investment and an improvement in the structure of the existing production apparatus and material resources are a most important component of the economic strategy of the CPSU.

The quality of structural policy is determined by the speed and extent of the correspondence of changes in the priorities of individual areas of scientific

and technical progress to the changes in the proportions of capital-investment distribution and shifts in the structure of production output. The mobility of the structure of production after a change in social requirements and the conditions of reproduction of economic resources is signified by the greater adaptive capabilities of economics and its ability to realize rapidly the achievements of scientific and technical progress and on that basis to raise persistently the efficiency of production and accelerate the rate of the country's socio-economic development.

The realization of the resolutions of the 27th CPSU Congress on economic and social issues in the development of our country, including a fundamental improvement in the structure of social production as well, will permit the shifting of the national economy onto a primarily intensive path of development and the achievement of an increase of 2.3-2.5 times in the productivity of labor in the forthcoming five-year plan along with a substantial increase in the level of national welfare on that basis.

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

LEAD ARTICLE POINTS TO NEW SIGHTS FOR SOVIET ECONOMY

Moscow PLANOVOM KHOZYAYSTVO in Russian No 12, Dec 85 pp 3-9

[Lead article: "New Advances of Soviet Economy"]

[Text] It is pointed out in the draft of the new edition of the CPSU Program that the task of accelerating the country's social and economic development advanced by the party requires deep-seated changes first and foremost in the decisive sphere of human activity--the economy. It will be necessary to make a sharp turn toward intensification of production and to reorient each enterprise and each sector to full and first-priority utilization of the qualitative factors of economic growth. A transition will have to be achieved to an economy of higher organization and effectiveness with all-round developed productive forces, mature socialist production relationships and a well-adjusted economic mechanism.

The strategy of further movement of Soviet society toward communism is concretized in the draft of Basic Directions of USSR Economic and Social Development for 1986-1990 and the Period to the Year 2000. It reflects the achieved successes of the Soviet people, generalizes the practice of communist construction in the USSR and embodies the chief political directive of the party in the sphere of the economy for the forthcoming 15 years--acceleration of the country's social and economic development.

The Soviet Union is setting out on the 12th Five-Year Plan in possession of a powerful economic and scientific-technical potential. National wealth grew by one-third in the years of the 11th Five-Year Plan and attained 3.6 trillion rubles. Fixed production capital grew and at the present time exceeds 1.6 trillion rubles.

A large program of capital construction has been completed. More than 840 billion rubles of capital investment were assigned for the national economy. At the same time, capital investment for reequipment and modernization of existing enterprises grew at a faster pace.

Production volume of industry--the leading sector of the Soviet economy--increased by 20 percent. Machine building, particularly electronics, machine-tool building, robotic production and instrument making developed at advancing rates.

Output of the product list of structural materials, economical types of plastics, synthetic fibers, high-grade cement and glued wooden structures was expanded and considerably renewed.

The USSR Energy Program has been put into effect. Atomic energy is developing at an accelerated pace. At the present time, the share produced by AES amounts to 10 percent of all generated electric power, and the USSR has assumed first place in the world in production of petroleum and gas.

The party's agrarian policy has been successfully implemented, and the USSR Food Program was carried out. Gross agricultural production for the year exceeded on the average by 6 percent the 1976-1980 average annual level.

Transport operation improved and freight turnover in all its forms grew by 15 percent. The ahead-of-schedule operating traffic on the Baykal-Amur Railroad Mainline is of major importance for the continuing development of Siberia and the Far East.

Positive changes have been achieved in intensification of production and raising of its efficiency. Ninety percent of national-income growth has been provided through growth of socialized labor's productivity. In a number of sectors, the entire growth of production output was attained through growth of labor productivity.

The continued growth of the material and cultural living standard of the people was secured on the basis of a rise in the economy and growth of its efficiency. Real per-capita income of the population increased by 11 percent over the 5-year period. Average annual pay of workers and employees grew by 13 percent and in 1985 reached 190 rubles, while the pay of kolkhoz farmers rose by 29 percent and amounted to more than 150 rubles per month. More than 20 million persons received an addition to their income solely through central measures for improving the pay of labor.

A new large stride was taken in the solution of the housing problem. During the five-year period, residential houses were made available with a total living space of more than 550 million square meters. This made it possible to improve the housing conditions of more than 50 million persons.

Generalizing the positive results of the 11th Five-Year Plan in the creation of a solid base for further forward movement, the Basic Directions contain an analysis of negative factors in the development of the economy, their causes and ways of getting rid of them. They include:

- an inadequate tempo of introduction of new equipment and technology;

- lag behind present requirements of the technical levels and quality of many products, including consumer goods;

- violation of contractual discipline for deliveries of products;

non-fulfillment by certain republics, ministries and associations of plan targets for the production of manufactured and agricultural products, startup of production capacities, economy of material outlays, raising of production efficiency.

Among the defects, the main thing is that changes in objective conditions of production development requiring acceleration of its intensification were not taken into account in a timely manner, and reorganization of structural policy and methods of management and the actual psychology of economic activity was slow in being carried out.

The draft of Basic Directions contains a formulation of the party's economic strategy for the period to the year 2000, which will be a major historical stage on the path of improving developed socialism and the implementing the program goals of the CPSU.

The economic policy developed by the party is based on a thorough knowledge and use of economic laws, on scientific analysis of the state of productive forces and production relations and all-round consideration of the achievements of scientific and technical progress and current and long-term needs of social development.

The highest goal of the party's economic strategy for the forthcoming period continues to be creation of favorable conditions for the harmonious development of the individual, improvement of all aspects of the life of the Soviet people and steady rise of the people's well-being. The means of attaining this goal have been determined, namely: further rise of the economy, its all-out intensification, transformation of the material and technical base and mass introduction of the latest achievements of science and technology, establishment of a highly efficient system of administration and management and bringing into operation all organizational, economic and social reserves.

An objective was set to create in the next 15 years a production potential approximately of the same scale as that accumulated over all the preceding years.

Special attention is paid in the draft of Basic Directions to measures for further improving the life of the Soviet people, for social and spiritual progress of society, for creation of conditions for highly productive labor of the able-bodied population and at the same time for manifestation of care for pensioners, students and the rising generation and for offering all possible assistance to families, particularly to women who are mothers.

A complex of measures has been designated in the field of change in the character of labor, expansion of the opportunity of development and employment by workers of their creative forces, abilities and gifts. The main thing among these measures is all-out mechanization and automation of production and the elimination of activities that are unskilled, monotonous and types of labor that constitute heavy work for by man. Such measures are reinforced by targets in the field of education, vocational training, growth of general culture and significant increase in the production of machines and mechanisms.

This will be an important condition for further overcoming significant differences between town and country and mental and physical labor.

It is designated in Basic Directions to increase real per-capita income 1.6-1.8-fold; to accelerate the rate of reduction of manual labor and to reduce its share in the production sphere to 15-20 percent; to put into operation dwellings with a total living space of not less than 2 billion square meters; to increase the volume of public consumption funds roughly twofold; to increase production of nonfood goods no less than 1.8-1.9-fold and the volume of services for the population 2.1-2.3-fold.

The basis of all these measures for expanding people's consumption and improving working conditions will be dynamic growth of the economy based on completion of the transition of public production to the intensive route of development and improvement of its structure. It is planned to raise public labor's productivity and to secure through this factor the entire growth of the national income and production of all sectors of material production.

An important stage in the realization of the objectives of the perspective period will be the 12th Five-Year Plan, which should serve as a turning point for all directions of the country's economic and social development. Its main objective CONSISTS OF BOOSTING THE RATE AND EFFECTIVENESS OF DEVELOPMENT OF THE ECONOMY ON THE BASIS OF ACCELERATION OF SCIENTIFIC AND TECHNICAL PROGRESS, REEQUIPMENT AND MODERNIZATION OF PRODUCTION, INTENSIVE UTILIZATION OF THE CREATED PRODUCTION POTENTIAL, IMPROVEMENT OF THE SYSTEM OF MANAGEMENT AND THE ECONOMIC MECHANISM AND ACHIEVING ON THIS BASIS A FURTHER RISE IN THE WELL-BEING OF THE SOVIET PEOPLE.

Proceeding from this, the draft of Basic Directions designates acceleration of the growth of public production. The national income used for consumption and accumulation, will grow over the 5-year period by 19-22 percent and output of manufactured products by 21-24 percent, including production of the means of production by 20-23 percent and production of consumer goods by 22-25 percent. The average yearly volume of agricultural production will increase by 14-16 percent.

A task was set to achieve a breakthrough in intensification of production on the basis of fuller utilization of the production potential. It is planned to increase productivity of socialized labor by 20-23 percent, including in industry by 23-25 percent. The entire growth of industrial and agricultural production as well as the volume of hauls on railroad transport and of construction work will be secured by means of this factor.

The regime of economy is being intensified in all sectors of the national economy. It is contemplated to save 200-230 million tons of standard fuel and 12-14 million tons of rolled ferrous metals. In construction, savings are planned of rolled ferrous metals amounting to 13-15 percent, of cement--of 8-10 percent and of sawn timber of 10-12 percent. All this will make it possible to reduce materials intensiveness of the national income by 4-5 percent, power intensiveness by 7-9 percent and metal intensiveness by 13-15 percent.

The basis of achieving the designated advance in economy of material resources is acceleration of scientific and technical progress as the main strategic lever in a qualitative transformation of productive forces and of the entire national economy. The level of automation of production will be twice as high and volume of use of progressive basic technologies such as production without a blast furnace, continuous casting of steel and the use of diesel fuel and gas in motor transport will be increased 1.5-2 fold.

The most objective and generalizing indicator of scientific and technical progress and of the level of production organization and labor discipline is product quality, it was pointed out at the CPSU Central Committee at the conference on questions of speeding up scientific and technical progress. The share of manufactured products of the highest category of quality will be increased 1.9-2.1-fold, while in machine building newly acquired varieties of equipment in terms of productivity and reliability should exceed similar produced products. Output of modern high efficiency computers of all classes will be provided at a high rate.

The draft of Basic directions provides for a sharp increase in equipment aimed at reequipment and modernization of existing enterprises, for significant expansion of renewal of obsolete fixed capital and for attaching a first-priority importance to its replacement, first of all its active part.

At the conference at the CPSU Central Committee on questions of acceleration of scientific and technical progress, it was emphasized that in reequipment of the national economy and carrying out of the scientific and technical revolution, a key role belongs to machine building, which is to radically change its relationship to the machine-building complex. For the realization of such an approach, the draft of Basic Directions plans to achieve radical modernization and outstripping development of the MACHINE-BUILDING COMPLEX, first of all of its basic sectors--machine-tool building, production of computer equipment, instrument making, electrical engineering and electronics. As a result, reequipment will be carried out in a short time of all sectors of the national economy on a new technical basis.

Production output of machine building and metalworking will grow 40-45 percent over the 5-year period. First-priority development will be assigned to production of equipment for atomic stations for heat supply and small-capacity power installations for remote regions of the country, mining equipment of large unit capacity, metallurgical equipment and other products.

Qualitative changes will take place in the machine-building sectors. It is planned to reduce three-fourfold the time required for creation and introduction of new equipment, to significantly boost the life of its operation and reliability and durability; to accelerate the creation and introduction of new generations of machine, basically new types of equipment, and also to increase the output of high-production machines, equipment and instruments meeting the highest world standard in their technical indicators.

In machine building, there will be introduced on a broader scale flexible reorganized production operations and systems of automated planning, automatic lines, machines and equipment with built-in microprocessor technology

equipment, multioperational machine tools with numerical control, robotic, rotor and rotor-conveyor complexes.

The material basis for effective operation of national-economic sectors, first of all machine building and construction, is further development and improvement of the COMPLEX OF STRUCTURAL MATERIALS. Improvement of the structure of their production and increasing effectiveness of use are an important problem affecting the interests of such extremely important industrial sectors as metallurgy, chemistry, timber, woodworking and pulp-and-paper industry and the construction materials industry.

Metal continues to be a basic structural material. Production of finished rolled metal will reach 116-119 million tons. At the same time, production of its most progressive forms will grow at a considerably faster rate. Thus smelting of oxygen-converter and electric steel will increase 1.3-1.3-fold and output of metal powders by more than twofold. Production of high-strength pipe for petroleum types of products and gas-conduit pipe of large diameter and other pipe varieties with plant anticorrosion coating will be expanded.

The production of contemporary structural plastics will undergo accelerated development and production and the product list of small-scale chemical products as well as substitutes for vegetable oils and food products used for industrial purposes will be increased and expanded.

In the timber, pulp-and-paper and woodworking industry, the production of wood fiberboard will grow 17-20 percent and of wood chipboard and cardboard 1.3-fold.

In the field of construction materials, it is planned to systematically shift to delivery of products of high construction preparedness. It is also planned to expand the assortment and volume of delivery of high quality products, including local construction materials, for the needs of the population.

Together with machine-building and structural materials, sectors of the fuel and power complex are of decisive importance. Their development will be subordinated to the task of stable provision of the country's needs for all types of fuel and power through an increase in their extraction, production and implementation of a purposeful energy-conserving policy. It is planned to bring up production of electric power to 1,840-1,880 billion kilowatt hours, including at atomic electric power stations up to 390 billion kilowatt hours. Recovery of petroleum, including gas condensate, will reach 630-640 million tons, gas--835-850 billion cubic meter and coal--780-800 million tons.

Major tasks have been set with respect to the development of the AGROINDUSTRIAL COMPLEX. It will be necessary to achieve a significant rise in the yield of all agricultural crops and in animal-husbandry productivity, to achieve stability of agricultural production and to reduce to a minimum its dependence on natural and climatic conditions.

The average annual volume of gross agricultural production will increase by 14-16 percent, principally through intensive development factors, introduction of the latest achievements of science, technology and advanced practice and

efficient use of the created production potential, Gross grain production in 1990 will reach 250-255 million tons, sugar beet--to 92-95 million tons, sunflower--to 7.4-7.5 million tons; potatoes--to 90-92 million tons, vegetables and melon crops--to 40-42 million tons, fruits and berries--to 14.5-15.5 million tons and grapes to 10.5--11.5 million tons.

An objective was set to secure stable growth of animal-husbandry products. Meat production by 1990 will reach 21 million tons (in dressed weight), milk--106-110 million tons and eggs--up to 80-82 billion each. It is planned to achieve the designated capacities on the basis of introduction of intensive methods and progressive flow production technologies for meat, milk and other products.

As in other national-economic sectors, reequipment of the agroindustrial complex will be of great importance. In this connection, fitting it out with economical, high-efficiency machines, specialized loading and unloading equipment, irrigation, earth-moving and construction equipment of increased unit capacity and machines for fodder procurement and application of organic and mineral fertilizers and pesticides will be improved.

Other sectors of the agroindustrial complex will also undergo further development. Production volume of the food, meat and dairy sectors of the industry will grow by 18-20 percent. In the fishing industry, production of food fish products will amount to 4.4-4.6 million tons, that of canned fish--3 billion standard cans. In the milling and hulling and mixed-feed industry, production of the highest grade of flour will increase 1.4-1.5-fold, the quality of mixed feeds will be upgraded, and the relative share of grain among them will be reduced through the use of full-valued additives.

Qualitative indicators will be improved in the processing sectors of the agroindustrial complex. Thus, labor productivity in the food industry will grow by 14-15 percent, in the meat and dairy industry by 25-28 percent and in the fishing industry by 10-12 percent. Production cost in these sectors will be reduced by 3-5 percent.

An important task for all ministries and departments and soviets of people's deputies is systematic carrying out of the Complex Development Program for CONSUMER GOODS AND THE SERVICE SPHERE for 1986-2000. Implementation of the program possesses a number of special features. The chief of them is the fact that all enterprises, associations and organizations regardless of their departmental affiliation and all labor collectives of the country are being broadly involved in it.

Targets for all directions of the forthcoming work were determined comprehensively: from planning and modeling of products and procurement of raw materials to output of the end products. Expansion of goods production and the accelerated development of all types of services have been balanced with growth of the population's monetary income and take into consideration the needs of all social groups. Finally, the program will oriented toward all progressive tendencies in our economy: comprehensive utilization of scientific and technical achievements, bolstering the regime of economy and thrift and radical improvement of the quality of goods and services.

Growth of the scale of the Soviet economy, extension of public division of labor and expansion of economic ties and requirements for raising production efficiency bring to the fore as an important task the development and improvement of the COUNTRY'S TRANSPORT SYSTEM. Basic Directions provide for strengthening the material and technical base of all forms of transport, accelerated introduction of the achievements of scientific and technical progress and wide-scale employment of progressive means of hauling freight. Coordination will be improved of the operation of all types of transport and use of transport equipment, and delivery times for freight will be shortened with full assurance of its safety.

For the successful fulfillment of targets for the planned period, realization of the capital-construction program is of great importance. The total volume of capital investment going into the national economy during the 12th Five-Year Plan will be increased by 18-21 percent. In this connection, the task was set to concentrate material, financial and labor resources on the most important construction projects, first of all on the construction of facilities determining scientific and technical progress and on the solution of social problems. The reproductive and technological structure of capital investment will be improved and the share in it of expenditures aimed at the reequipping and modernization of existing enterprises as well as the share of expenditures for equipment in the construction of new production facilities will be significantly increased.

Concern for the individual and his growing material and spiritual requirements has always been at the center of our plans. It is planned to provide as basic directions the further rise of the people's well-being and the increasingly fuller satisfaction of the growing material and spiritual needs of the Soviet people. The average monthly earnings of workers and employees will be increased by 13-14 percent and will reach 215-220 rubles, the average pay of kolkhoz farmers--by 18-20 percent and public consumption funds--by 20-23 percent. At the same time, growth of public consumption funds will be primarily aimed at improving conditions for bringing up the rising generations, the social security of the population and development of health care.

For labor collectives achieving high results in raising production efficiency, better possibilities will be created for satisfying the need for housing, children's preschool institutions, public health services and other social benefits.

It is planned through the draft of Basic Directions to consistently raise the level and develop the consumption structure and to improve the supply of consumer goods for the population. For these ends, retail trade turnover will be increased by 18-22 percent over the 5-year period.

Major tasks have been set for improving the housing conditions of the Soviet people. It is planned to build dwellings with a total living space of 565-570 million square meters. At the same time, construction of dwellings according to new economical model plans with improved planning of accommodations will be significantly expanded. The network of sanatoriums, boarding houses, rest

homes and other rest institutions and pioneer camps will be expanded. Tourist excursion services for the population will be improved and the material base of culture and art will be bolstered.

The successful development of the country's economy and its increased effectiveness on the basis of acceleration of scientific and technical progress require serious reorganization of PLANNING AND MANAGEMENT and of the entire economic mechanism. The draft of Basic directions provides a complex of measures for the solution of such tasks. Specifically, it is planned to significantly improve planning, to boost the role and responsibility of Gosplan USSR as a central element in planned management of the economy and to consistently put into practice Lenin's idea of transforming Gosplan USSR into a scientific and economic organ.

It was emphasized at the October (1984) Plenum of the party's Central Committee that the draft of Basic Directions is intended as it were to materialize the positions of the CPSU Program and to translate them into the language of planned targets with reference to such a responsible stage of its realization as the 12th Five-Year plan and the period to the year 2000. For this reason, its implementation will require of the party, the working class, the kolkhoz peasantry and the laboring intelligentsia great efforts, and this must be a party and state task.

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

ECONOMISTS EXPRESS VIEWS AT MANAGEMENT CONFERENCE

Moscow SOTSIALISTICHESKIY TRUD in Russian No 1, Jan 86 pp 120-123

[Article by M. Rubin: "Economic Planning Factors in Management of the National Economy (From the All-Union Conference)"]

[Text] For the successful and accelerated solution of the party's strategic task--to achieve a decisive turning point in shifting the economy to intensive development, it will be necessary in a planned and comprehensive manner to improve the economic mechanism and the entire management system. It is especially important to develop independence, to increase responsibility at all levels and in all parts of management and administration and to create social and economic prerequisites and conditions of highly effective use of achievements of scientific and technical progress and general material and moral interest in developing and using new equipment and technology.

In order to reorganize the economic mechanism in this direction, to put to use the large social and economic resources for growth of production efficiency and intensiveness and to develop initiative, enterprise and activeness of workers in accordance with the needs of developed socialism, it is necessary to work out a unitary conception of urgent changes in production relationships.

The importance of these principles was pointed out in the introductory address of Academician Ye. Sergeyev on opening the All-Union Scientific and Practical Conference "Current Problems of Improvement of Economic Planning Factors in Management of the National Economy" which was held in Moscow at the Academy of National Economy attached to the USSR Council of Ministers and the All-Union Council of Scientific and Technical Societies. Responsible personnel of the CPSU Central Committee and the USSR Council of Ministers, heads of union and republic ministries and departments, directors and leading staff members of a number of economic institutes, academies of sciences and gosplans, professors, scientific associates and instructors of educational and scientific-research institutions took part in it.

The totality of measures which should be expediently developed and implemented for the further improvement of the system of management, in the opinion of Academician D. Gvishiani, is characterized by all the attributes necessary for allocating them to the goal complex program. Chief among them being an

orientation toward the common goal, the diversity and the heterogeneity of the encompassing forms of basic and control activity, and the necessity of enlisting toward the development and implementation of these measures many organizationally and economically unrelated executive factors.

Improvement of the management system presupposes the solution of such theoretical questions as validation of fundamental directions for the improvement of production relationships of developed socialism; planned use of the system of economic laws in developed socialist society; construction of a scientifically valid model of the economic mechanism adequate for their needs; determination of criteria for combination of centralized and decentralized elements in management of the economy, functions of different levels and elements of management of the national economic complex; improvement of its methodology, organization, indicators, forms and methods; establishment of a rational organizational structure of management as a factor in raising efficiency of production and reproduction and others.

The growing importance of planned utilization of financial and credit levers and price formation in the mechanism of management of the national economy is characteristic of mature socialism. At the same time, it is necessary to provide more exact coordination of production plans with their resource, price and financial provision and consumer demand for the purpose of ensuring stable economic conditions for full cost-accounting operation of associations (enterprises). It is necessary to optimize the correlation of operation of the finance-credit and price mechanism, to liquidate the price increasing tendency, to exclude free grants and to stimulate growth of budget accumulations and cost-accounting funds.

It is important to overcome unprofitability and low profitability of production. Depending on each concrete situation, it is necessary to adopt proper measures--to increase supervision of enterprises that are unprofitable or of low profitability, or to carry out in them organizational, technical and structural reorganization, or to revise the price level for their products, or to do all this together, including them in efficiently operating associations. It is necessary to more boldly close down certain exhausted unpromising production operations producing losses for society, compensating for losses connected with this from increased production output at efficiently operating enterprises. Academician Lukinov directed attention to the urgency of these measures.

Under these conditions, working out a 5-year finance and credit plan broken down by years with selection of financial resources for capital investment is of vital importance. It is necessary to provide for expanded use of normative distribution of profit, the growing role of net profit, approval of different norms of its distribution, progressive profit taxes (additional profit), introduction of special conditions of its use from the sale of products not dictated by delivery contracts and orders. This will strengthen the tendency of enterprises to adhere not only to group but also to microassortment (on the basis of trade assignments); the withdrawal of such profit in sectors working for a production user if the plan of product sales is not fulfilled, taking the contract into consideration; securing stable sources of financing for expanded reproduction of fixed production capital through an increase in the

share of amortization deductions for renovation through curtailment of deductions for capital repairs as well as raising the size of amortization for renovation allotted for the production-development fund. Provision should also be made for the introduction or increase of payments for natural and labor resources for purpose of more efficient use of these resources, securing an actual correspondence of credits for their sources, barring the formation of revolving capital from payment credits and increasing differentiation of credit extension for well and poorly operating enterprises. We have in mind preferential credit extension for the former and stricter conditions for the latter; development of short-term and medium-term credit for effective fulfillment of enterprises of efficient measures regardless of whether they are designated in the plan and a significant increase of long-term credits for reequipment and modernization of existing enterprises; clear differentiation of loan-fund resources and own resources of associations (enterprises).

From the point of view of Academician A. Aganbegyan, it is necessary to transfer large associations to full cost accounting, restricting directive targets by indicators of the most important product mix and above-limit capital investment, expanding funds of associations and transferring them to self-financing and wide-scale credit extension. This will be required by the new reform of wholesale prices and their drawing closer to socially necessary expenditures and introduction of payment for resources. Moreover, material stimulation of labor collectives should be carried out not in dependence on plan fulfillment but on attained national-economic results computed in accordance with the new prices and reflecting national-economic effectiveness.

At the present time, the USSR State Committee for Prices jointly with Gosplan USSR, the USSR Ministry of Finance, the USSR Academy of Science, all-union ministries, departments and councils of ministers of union republics is working on a program for further development of scientifically based principles of price formation and on this basis of improvement of the price system for the long term.

As N. Glushkov, chairman of the USSR State Committee for Prices, points out, questions on optimal level and correlation of prices and their coordinated change are expected to be examined. Special attention is paid to analysis of price structure, scientific validation of such elements as amortization deductions, payment for production capital and resources being used, deductions into the unified fund for development of science and technology, normative profit, including its net surplus and other forms of net income. The guiding principle for the further improvement of prices will be stabilization and reduction of the existing level through scientific and technical progress, growth of labor productivity, economy of resources and reduction of production cost.

Taking into consideration the extremely important role of price improvement for boosting the effectiveness of the economic mechanism and the whole system of management of the economy, it would be useful to reject passive orientation of prices on the level and dynamics of actually accumulating expenditures in industrial sectors. They should be brought into accord with the changing level of socially necessary outlays of labor, and assigned targets for reducing production cost, growth of labor productivity and progressive norms

of resource expenditure as well as better utilization of fixed and working capital should be taken into consideration in setting new wholesale prices. Prices need to be determined on the basis of proportions designated by the 5-year plan while taking into account the actual effect of use of products, reducing them per unit of useful effect. Prices must be oriented on raw materials containing a complex of useful components and on ensuring cost-accounting interest for full extraction of these components, more thorough processing of raw materials and for introduction of waste-free technology and use of secondary resources. Prices of secondary resources should reflect reduction of national-economic expenditures on protection of the environment. It is necessary to increase the flexibility of price formation, to develop within economically valid limits the practice of setting contractual prices and to expand in this question the rights of regional organs, ministries, associations (enterprises), including in setting prices and additions to wholesale prices for individual types of equipment, components and parts in agreement with the customer.

Improvement of price formation should be done simultaneously with improvement of the system of economic norms and quotas of use of material and fuel-power resources, equipment and so forth. A system is needed of amalgamated norms and quotas for use of production resources for all-union industrial associations and ministries. Norms of use of resources for the formation of the wage fund, economic stimulation funds, distribution of profit and its substantiation are proposed as the chief means of influencing the economic interests of principal cost-accounting units. The norms should be of a general industrial (sectorial, subsectorial) character.

It is of basic importance to decisively change the system of material incentives, overcoming first of all the equalizing consideration of the individual contribution of each worker in remuneration of labor. A closer tie is needed of wage rates and salaries with planned changes in the level of labor remuneration through the means of money earned by enterprises. The wage fund should depend more on work results, correlation of growth rate of labor productivity and earnings, effective use of resources and satisfaction of needs for produced products. It would be useful to establish sizes of economic-incentive funds in shares from profit remaining for the individual needs of associations (enterprises).

As corresponding member of the USSR Academy of Sciences P. Bunich believes, raising the pay of engineering and technical personnel would contribute to stimulation of scientific and technical progress. In 1955, engineering and technical personnel earned on the average 70 percent more than workers in industry, but today the difference has been reduced to 10 percent. In construction, the average income of workers exceeds the income of engineering and technical personnel. It should be so arranged that a beginning engineering receives significantly more than a beginning worker, a medium-rank engineer more than a medium-rank worker, and a top engineer more than a top worker.

In recent years, the pay of scientists has been relatively reduced, especially in the spheres of academic science and in VUZ's where there are few bonuses.

This has lessened competition for graduate study and deteriorated its cadre potential. Reform is needed in the pay of scientists.

It was pointed out at the conference that generalization of results and further development of the large-scale economic experiment in industry is of pressing importance, for it would make it possible to find rational forms of solving pressing problems of increasing the orientation of the economic mechanism on acceleration of production intensification. Its preliminary results show that the complex of measures aimed at increasing the motivation of labor collectives in attaining high indicators on the whole has a positive influence on the results of their operational activity.

In generalizing the experience of the experiment, coordinated planning is required of all stages of preparation and fulfillment of deliveries from conclusion of contracts to the shipment of products. It is necessary to boost the role of physical indicators in planning the work of subdivisions of associations (enterprises).

It is especially important to improve the organizational and ideological provisions for the experiment directly in the associations (enterprises). At the same time, it is necessary to more completely tie in the conditions of the experiment to the 5-year plan; to boost the effectiveness of the stimulating mechanism for the economy of material and fuel-power resources, improvement in the use of fixed production capital under the conditions of the experiment; to experimentally check on the operation of associations (enterprises) on the basis of self-financing while taking into account the experiment of the Sumy Association imeni M.F. Frunze and the Volga Motor-Vehicle Plant imeni 50 Letiye SSSR; and to actively involve labor collectives in revision of norms.

Further improvement in the organization and planning of material and technical supply should contribute to the successful implementation and development of the experiment. In particular, what is envisaged is to switch enterprises taking part in the experiment to a system of supply with material-technical resources according to an agreed upon products list with guaranteed comprehensive delivery based on long-term contracts concluded by regional organs of Gosplan USSR with the user enterprises.

In order to organize an uninterrupted and regular supply of materials and products to the economic contracts, it is proposed to examine the possibility of creating and maintaining at enterprises of the Gosplan USSR system working (reserve) stocks of material resources in the required products list and size through reduction of a portion of production stocks of user-enterprises which are taking part in the experiment. As B. Yakovlev, the deputy chairman of Gosplan USSR, pointed out, the growth of deliveries of products is also specified on the basis of wholesale trade through enterprises and stores of regional organs of Gosplan USSR.

Reports at plenary sessions, speeches in sections and creative discussion express the desire of the conference participants to make a substantial contribution to preparations for the 27th party congress and the implementation of its decisions.

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

GOSPLAN EXPERT ON NEW APPROACH TO INTENSIFICATION

Moscow EKONOMICHESKAYA GAZETA in Russian No 13, Mar 86 pp 1-2

[Article by I. Materov, Gosplan USSR senior expert, in the column "Problems of Acceleration": "A New Approach to Intensification of Production"]

[Text] A new approach to the solution of intensification problems under present conditions stems from the concept presented by the April (1985) and elaborated by the 27th CPSU Congress of acceleration of the country's social and economic development. It is first and foremost the consideration that production intensification should assume a consistent and comprehensive character and that this process should be carried out at a tempo increasing from one 5-year period to another. The turning point in production intensification should be achieved during the 12th Five-Year Plan.

In documents adopted by the 27th CPSU Congress, basic paths of intensification are considered as being interdependent and reinforcing each other's directions of work. They include acceleration of scientific and technical progress, development of the administrative system and of management methods. Practical solution of intensification problems should be distinguished by that essential comprehensiveness and by that coalescence of measures of technical, organizational and economic character which are required in significant economic changes.

The interrelation of the paths of intensification is manifested particularly vividly for the purpose of scientific-technical and investment policy and structural shifts in the economy. Their unity is determined by a tendency toward technical modernization of the national economy, forming a solid basis of intensification. The possibility is created thereby of attaining higher world indicators of production efficiency and organization and boosting manifold the effectiveness of technical and economic decisions.

A special feature of the new approach to intensification is shown in the fact that each of its directions serves as an effective means of shifting the economy to more effective conditions of operation. This makes it possible to activate and strengthen social policy. An active, strong social policy in its turn predetermines to a significant degree growth of production efficiency. All these new approaches to intensification under present-day conditions determine the logic of economic thinking and reorganization of economic life.

Nature of the Changes

Leading directions of scientific and technical progress and social priorities serve as constantly acting guiding lines in implementation of scientific and technical policy, structural changes and adoption of investment decisions. Advantages in resource provision are to be found in directions contributing to wide-scale utilization of the achievements of science and technology, advanced production processes, a sharp rise in the level of use of electronics [elektronizatsiya] and comprehensive automation of the national economy, accelerated development of atomic energy, creation and large-scale utilization of new materials and expansion of the sphere of employment of biotechnology.

But orientation on key directions of scientific and technical progress must not be so understood that technical renewal of the national economy is a task of tomorrow rather than of today. To wait for the time when the technology of new generations will reach production as a full-flowing stream means to lose time irrevocably. Even now it is necessary to mobilize in each labor collective all immediate technical and organizational resources. Solely by uniting into one both long-range and immediate acceleration factors, it is possible to achieve a radical breakthrough in intensification of production.

Today a sharp shift in investment policy is of special importance because it is called upon to provide an initial powerful impulse to growth of acceleration. Investment policy forms its potential, ensuring materialization of the aims of scientific-technical and structural policy. It is possible to distinguish the following fundamental shifts in the investment sphere.

First, the investment activity level is rising. As we know, in the course of the last three 5-year plans, a reduction took place in the growth rate of capital investment. During the 12th Five-Year Plan, the total volume of production capital investment will grow by 25 percent versus 16 percent during the 11th Five-Year Plan. The accumulation fund's share is growing in the national income.

Second, a constantly growing portion of capital is being allocated for reequipment and modernization of existing enterprises and an increasingly diminishing one for new construction. In 1990, half of all production capital investment will consist of outlays for reequipment and modernization (in 1985, its share was at the 37-percent level), the volume of withdrawal of obsolete production fixed capital will be increased by no less than twofold compared to the 11th Five-Year Plan, and one-third of its active part will be renewed.

Third, investment policy is being actively utilized for the purpose of resource conservation and growth of output of end products from a unit of initial raw material, which will make it possible to develop at an advancing rate the processing sectors compared to the extractive ones. In the complex of processing sectors, machine building, chemistry and electrical engineering will receive priority development and are called upon to ensure emergence of the national economy to leading scientific and technical positions. The share of these sectors in industrial production will reach 41 percent in 1990.

Fourth, the chief principle of capital investment will be unconditional priority of qualitative over quantitative indicators. Those production operations and technologies whose production quality guarantees its effective use will possess the advantage.

Promotion of the principle of priority of quality over quantity is dictated by the whole course of the country's economic development. The production of unneeded or poor-quality products under conditions of slowing down of the growth rate of primary resources is becoming not just a ballast of the economy but a hindrance to its economic development. This applies to production of both the means of production and of consumer items.

As a matter of fact, the quality question is achieving decisive importance from the point of view of the results of practical realization of the program of technical modernization of the economy. "It is not enough to say that this is our immediate large reserve," it was stressed in the Political Report of the CPSU Central Committee. "Without high quality, acceleration of scientific and technical progress is impossible today."

This problem also has a foreign economic aspect. Solely by improving quality, it is possible to solve problems of active utilization of foreign economic activity for acceleration of internal development, reorganization of the structure of foreign trade turnover and lending exports and imports a more effective character.

An important feature of growth of investment activity during the new 5-year plan is the fact that it is occurring not because of folding of social programs, for it seemingly nurtures them. While the share of the consumption fund in the national income is being reduced, its absolute growth will increase by one-third. Production growth of consumer goods in industry will outstrip the growth of production of the means of production to an even greater extent than during the 11th Five-Year Plan. Growth of the population's real income will be speeded up.

At the Intersection of Priorities

Accelerated development of the machine-building complex is to be found at the intersection of priorities of scientific-technical, structural and investment policy. The new high-production machines and equipment are necessary for the qualitative renewal of the material base of both production and of the production and social and personal-services infrastructure. Because of this, machine building will be a first-priority objective of modernization. During the 12th Five-Year Plan, its rate of development will be almost 1.9-fold higher than that of industry as a whole. The level of renewal of machine-building production is designated to be brought to 13 percent by 1990 compared to 4.5 percent in 1985. In the sector, the process of renewal of the production apparatus will be sharply speeded up. Yearly sizes of renewal of the active part of production fixed capital will reach 10-12 percent during 1986-1990, which exceeds many times the level of the 11th Five-Year Plan.

Accordingly, a growing role is being assumed by base sectors of machine building, providing it and other sectors with the means of labor--machine-tool

building, production of computer equipment, instrument making, electrical equipment and the electronics industry. The production growth rate in these sectors during the 12th Five-Year Plan will exceed by 1.3-1.6-fold the average for machine building.

For the successful solution of tasks set for the machine-building complex and as a whole for investment policy, the rate of transformation of the basis of their material supply--of the complex producing structural materials--is of vital importance. The strategic directions of its development are improvement of quality and of the structure of metal production, acceleration of production of structural plastics and on the whole an increase in the combined balance of structural materials of the share of synthetic and other progressive types of materials.

The result of this developmental direction of the complex should be all-out economy of metal. Technological changes in metals and in sectors of users of its products concentrate on this. In the year 2000, the size of the national income, which will be practically doubled compared to 1985, will be essentially produced with the same scale of consumption of ferrous metals. By 1980, production of finished rolled ferrous metal products is planned to be increased by 7-10 percent with 19-22-percent growth of the national income. This growth is planned with stabilization of the pig-iron production level and reduced expenditure of coke. Such proportions were included for the first time in a 5-year plan.

The tasks of modernization of the national economy dictate new approaches to the solution of the energy problem. While in the Energy Program it is planned that before the end of the present century the average-annual rate of reduction of energy-intensiveness of the national income will amount to 0.6-0.9 percent, it is designated to have it reach 2.2 percent in Basic Directions.

With Diminished Resources

The interrelation and interdependence of the paths of intensification predetermines the all-round use of all intensive-growth factors. It is a question of economy both of embodied labor and of all kinds of resources involved in production--material, financial and labor.

That which must be done in the next 15 years to raise production efficiency and increase the contribution of intensive factors in economic growth is unprecedented for the Soviet economy. It will be necessary to achieve a rise in the rate of economic and social progress on the way of its all-round intensification. The problem, however, does not lie in restoration of the quantitative standards of growth of the '50s or the second half of the '60s. The nature of the acceleration lies in new quality of growth.

The special features of quantitative and qualitative characteristics under the new conditions can be shown with the following example. The basic directions indicated by the year 2000 will be attained for a significant range of products and for the rest will closely approach the level of the scientifically-based norms of rational consumption of food products and the

principal non-food products. In the future, sectors providing the population with these goods will assume new conditions of reproduction of their potential where maintenance of the attained level with subsequent qualitative improvement of products will become the chief aim of their activity. A high growth rate of physical indicators under these conditions will no longer make economic sense.

The sharp rise in the efficiency of public production as the result of its modernization will provide the possibility of weakening the influence on economic growth of restrictions connected with slowing down of the growth of additional labor and material resources brought into production.

During the 12th Five-Year Plan, it is planned to increase public labor's productivity, as specified in Basic Directions by an average of roughly 4 percent a year and in the '90s, as shown by calculations, by 7 percent. This growth will take place against the background of significant changes in the employment structure characteristic of an intensively developing economy. While in the second half of the '80s, the national income's growth rate and public labor's productivity according to the plan practically coincide and consequently the number of persons employed in material production will not undergo significant change, in the following decade, it will begin to be reduced annually at the very least by 1 percent.

The need and possibility of such development of the employment structure are due, first, to the need of allocation of work hands in behalf of the service sphere due to its accelerated growth. Second, demands are being increased on the level of qualifications and training of manpower, which raises the question of an increase in the number of persons studying full time away from production. Third, this is to be explained by an active social policy. Thus, implementation of its measures aimed at improving the living conditions of mothers with young children and of pensioners will reduce the supply of work hands from these categories of the population. Fourth, the designated high rate of comprehensive mechanization, automation and use of electronics in production should promote acceleration of the process of reduction of manual labor. Its share by the year 2000 will be better than halved, which will make it possible to release more than 20 million persons from low-skill work. Fifth, single-minded work to bolster discipline and organization in production and to strengthen the moral and material motivation of workers for high work results will be an important component in growth of its productivity.

Significant changes are also planned in the field of use of fuel, power, raw and other materials. Only 20-25 percent of growth of their need will be provided by the year 2000 by growth of production and procurement. The overwhelming portion of growth of requirements will be covered by economy behind which stand technological and structural changes and by new emphasis on investment policy.

In the coming years, it will be necessary to achieve a turning point in the dynamics of efficient use of basic production capital and capital investment. Now during the 12th Five-Year Plan, measures aimed at improvement of scientific-technical, structural and investment policy will make it possible to boost effectiveness of production capital investment by 10 percent. As a result, the possibility will appear of slowing down reduction of return on

investment roughly to 1.5 percent. During the next stage, the first half of the '90s, it is planned to stabilize the level of return on investment and subsequently to secure its growth.

Qualitative changes in the economy designated by the decisions of the 27th party congress are to be embodied in the life of each labor collective. The validity and realistic character of plans for the technical development of enterprises and associations, renewal of production output, boosting of its quality and the level of production efficiency in the final analysis will determine the new character of the Soviet economy and the new quality of the Soviet people's life.

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ECONOMIC POLICY, ORGANIZATION, AND MANAGEMENT

PROBLEMS IN EFFECTING RADICAL ECONOMIC REFORM ACKNOWLEDGED

Moscow EKONOMICHESKAYA GAZETA in Russian No 20, May 86 pp 6-8

[Article by A. Milyukov, doctor of economic sciences: "The Problems of Radical Reform"]

[Text] The question of improving the management of our economy is not new. A great deal of attention has been paid to this problem at all stages of the building of socialism and communism. But today the situation is such that a radical reform of the entire system of economic management is necessary to help accelerate the socio-economic development of the country.

The Party Congress worked out the main directions of the fundamental restructuring of administration and economic methods. They serve as the basis for working out specific solutions. Already half of industrial production is being manufactured in enterprises working according to the new system. Decisions have been made about improving the economic mechanism in the agro-industrial complex and about shifting associations, enterprises and organizations of a number of ministries and departments to material and technical supply by way of wholesale trade. A resolution has been adopted about improving planning and economic incentives and perfecting the administration of the production of consumer goods in light industry. Questions of improving the economic mechanism in trade, capital construction and transport are to be worked out.

Practice is showing that the new economic conditions, which are based on expanding the independence and responsibility of enterprises, are already having results. Enterprises working in the new way, as a rule, are providing, first, improved fulfillment of delivery orders according to contracts; second, increased production by and large with the same or fewer workers; third, a more rapid increase in the production of advanced types of products.

At the same time, the results achieved cannot fully meet the requirements ensuing from the decisions of the 27th Party Congress. FUNDAMENTAL CHANGES ARE NEEDED IN THE ECONOMIC MECHANISM AS A WHOLE AND IN CREATING A COMPLETE ADMINISTRATIVE SYSTEM WHICH HAS A MORE ACTIVE EFFECT ON PRODUCTION. Work to extend the new economic conditions must be continued in enterprises where they are already being applied.

The main attention must be shifted to developing specific ways and means of implementing party instructions. In this as well a tremendous role is played by our central economic departments, most of all USSR Gosplan. IT IS NECESSARY, RELYING ON EXPERIENCE WHICH HAS BEEN ACQUIRED, TO WORK OUT STEP BY STEP AND EXTEND THE NEW MANAGEMENT FORMS, SHIFTING THE STRESS TO ECONOMIC MANAGEMENT METHODS. Our economic science, the opportunities of which have not yet been sufficiently used, must have much to say here.

The main direction of improving the entire system of economic management is INCREASING THE EFFECTIVENESS OF CENTRALIZED LEADERSHIP OF THE ECONOMY -- intensifying the role of the center in implementing the main objectives of the party's economic strategy. Speaking at the AvtoVAZ Production Association, CPSU Central Committee General Secretary Mikhail Sergeyevich Gorbachev noted that the tremendous advantages of a planned economy are realized through the activity of the central administrative organs. It is necessary to strengthen the role of the central administrative organs in those things which concern ensuring the proportions and balance of the economy and optimal combination of statewide, branch and regional interests.

At the same time, the party is firmly carrying out a policy of halting the practice of trivial tutelage of enterprises. Another aspect of improving the economic mechanism is precisely and decisively expanding the boundaries of independence of enterprises and increasing their responsibility for achieving the highest results.

QUESTIONS OF CENTRALIZED PLANNING AND ITS IMPACT ON THE ACTIVITY OF ENTERPRISES ARE LARGELY ASSOCIATED WITH THE SELECTION OF SO-CALLED DIRECTIVE INDICES. This has been widely discussed in the press and various "combinations" and systems of indices have been tested in practice.

All of the models being used, in our view, are with full justification planning by directive an expanded products list in physical terms. Owing to this the society controls the main proportions of the development of production, ensures an active centralized effect on the work of enterprises and, thereby, achieves the most complete satisfaction of the needs of the economy and population.

Practice has been acquired in planning the product mix. Unfortunately, what is being done now cannot be suitable. Even enterprises which have shifted to the new economic conditions are assigned ever expanding lists. The arguments are usually these: with a detailed product list it is easy to ensure the production of material resources, coordinate them in balances and control the course of target fulfillment. But even by the most noble considerations it is hardly possible to justify a policy of expanding centrally established lists.

THE PROBLEM IS, WHILE LIMITING PRODUCT LISTS TO THE MOST MAJOR POSITIONS OF THE PLAN IN PHYSICAL FORM, TO INCREASE THE ROLE OF ECONOMIC CONTRACTS AND PROVIDE FOR DETAILING PRODUCT LISTS DIRECTLY IN CONTRACTS BETWEEN ENTERPRISES.

The main thing now is to find not only general approaches to this problem, but also specific ways of solving such questions as the development of wholesale trade and strengthening of direct, long-term economic ties.

In our view, a significant step forward in this direction was made in the new economic conditions due to the fact that the draft plan for main indices, material resources and funds reached the enterprises much earlier than before. The enterprises have the opportunity to work more extensively to conclude economic contracts.

An important problem remains CHOOSING THE INDICES OF PRODUCTION EFFECTIVENESS ESTABLISHED BY DIRECTIVES IN THE PLAN. Different systems of indices have been tested in practice and the whole spectrum is proposed in the economic literature. Under large scale experimental conditions, production cost and increase in labor productivity are set down along with profit. Analysis will still show how useful it is to measure effectiveness according to different parameters.

A MULTIPLICITY OF INDICES, NO MATTER HOW IMPORTANT EACH OF THEM MAY BE, LIMITS INDEPENDENCE. IT WOULD BE APPROPRIATE TO INCREASE THE ROLE OF PROFIT, WHICH CHARACTERIZES END RESULTS.

Such a system has now been adopted for light industry. However, it is necessary to work out more thoroughly a planning methodology and profit calculation.

THE QUESTION OF USING THE PROFIT INDEX UNDER EXISTING PRICE CONDITIONS REMAINS ESPECIALLY ACUTE. The different profit levels of products, the prices for which often do not reflect their consumption attributes, necessitate more careful analysis of the profit index, the use of fixed payments, etc.

Not only day-to-day regulation of the activity of enterprises is important, but also control over its future development. In this regard, questions concerning the management of capital investments are moving to the forefront.

Obviously, the state must control by direction construction quantities and the time periods for the introduction of major facilities. The experience of experiments which have been carried out also confirms the correctness of the direction taken toward the technical retooling of production mainly through enterprise funds, formed from profits and through depreciation deductions.

At the same time, it is necessary to develop specific methods for the formation of funds for the development of production taking into account the peculiarities of the work of different enterprises.

Economic Norms

The shift of the whole administrative system to economic methods presumes implementing measures in the area of improving cost accounting, price formation, financing and other economic levers. LONG RANGE ECONOMIC NORMS OCCUPY A CENTRAL PLACE AMONG THEM. Definite experience in their application has been acquired and this experience is positive. It indicates that norms may have a significantly greater effect given more thorough development and capable application.

What economic norms are being applied in practice? What constitutes their essence and importance?

At present three main groups can be distinguished: norms for the formation of the wage fund and economic incentive funds, and norms for distribution of profits.

Norms carry a dual burden. First, they are a means for the centralized regulation of the activity of enterprises and, second, they facilitate development of the initiative of labor collectives and the creation of confidence that their achievements will be rewarded. Norms must be long term and ensure a combination of the economic interests of society and the enterprises.

Experimental results show that some norms function and have an effect. Their stability is also maintained.

Let us take, for example, the norms for the wage fund. It has been established now in machine building for the majority of enterprises that when production volume (figured as normative net production) increases one percent the wage fund increases, as a rule, 0.3 percent. Each enterprise knows that when rates of production increase it more or less automatically earns an additional supplement to the fund, the determination of which has become, thus, a function of the enterprise itself, and not the result of subjective calculations by employees of higher administrative organs.

A similar situation is also characteristic of other economic norms.

What are the unresolved problems here?

The main problem is in the basis for the levels of the norms themselves and in ensuring their reality and role as incentives.

Obviously, it is necessary first of all to PROVIDE A CLOSE LINK BETWEEN NORMS AND GENERAL ECONOMIC PROPORTIONS AND ECONOMIC DEVELOPMENT RATES. Only under such conditions can a thrust be given to norms which will correspond to the interests of society as a whole. Of course, stemming from common requirements for the use of resources, norms should be uniform for all enterprises of a branch (sub-branch). Gradually we must move in this direction.

The question is unavoidable: How can individual conditions of production associations and enterprises be taken into account in the establishment of norms?

This is an extremely complex question.

Under the new economic methods norms are established in accordance with growth rates. This makes it possible within certain boundaries to use uniform norms: funds earned previously remain with the enterprise, and the increase is formed according to a unified norm. When shifting to making allowances into funds based on the amount of profit or other index, the need for individualization grows stronger.

The overall amount of profit and volume of production and their correlation with the wage fund are always individual and frequently differences in these correlations are not associated with the effectiveness of the activity of the enterprises. Therefore, apparently, during the 12th Five-Year Plan we are to use individual norms. Under these conditions the main task is solved naturally: The interests and responsibility of enterprises for improving their activity is ensured. However, difficulties arise in this variant. The fact is that with individual norms an enterprise which uses its reserves better may not always turn out to be at an advantage over those where resources are used less well.

Another extremely complex and crucial problem in norm setting is searching for ways and methods of ensuring their stability. As a matter of fact, the working conditions of enterprises change constantly. And what about norms? If we begin to adjust them and are driven by the changed conditions they will lose their meaning.

Consequently, it is necessary to think through carefully and justify opportunities for rendering specific financial assistance when necessary to enterprises, primarily on a reimbursable basis. At the same time, it is necessary to determine the procedure for immobilizing additional differentiated income obtained through favorable external factors. The size of the norms which determine the procedure for distributing profits and form economic incentive funds must not change.

Further, it is very important to introduce stable norms for the distribution of profits between the budget and enterprises. Without this norm the new methods now being applied will not have the required effect on improving the use of the entire production capacity of enterprises.

These are but some aspects of the problem of norm setting, which, undoubtedly, require solution and extensive discussion with the participation of a large circle of economists and practitioners.

Complete Cost Accounting: Self-Repayment and Self Financing

In the decisions of the 27th Party Congress it is underscored that enterprises must be shifted to complete cost accounting; apply the anti-expenditure mechanism; and set the level of income of the collectives in direct dependence on the effectiveness of their work.

Implementing these requirements makes it necessary to overturn the existing forms of economic relations and improve their effectiveness and influence on accelerating economic growth rates. One of the main problems is providing self-financing. At AvtoVAZ and in the Sumy Scientific Production Association imeni M. V. Frunze the main problem has been solved. A firm percentage of withholdings from profits for the state budget has been established and remaining profit is divided among economic incentive funds according to norms.

The first step is to determine the economic boundaries of norms for distribution of profits between the budget and enterprises and to establish economic incentive funds.

The main task here is to ensure a combination of social and collective interests; correctly distribute the earnings of enterprises between accumulation and consumption and create motivation to constantly improve production and accelerate scientific and technological progress.

Second is the relationship between the enterprise and the ministry.

To what extent can the higher administrative organ, most of all the ministry, actually participate in expanding production and in reconstruction and technical retooling?

Obviously, its main task should be to manage technological development and help determine the most promising directions. The ministry must have monies and reserve funds. However, they should be established within intelligent limits. Otherwise the uncompensated way of financing the development of production will be restored, which contradicts the ideas embodied in self-financing.

Third are the sources for financing of new construction and reconstruction of the enterprise.

Apparently, THE EXPANSION OF PRODUCTION, INCLUDING NEW CONSTRUCTION, THROUGH THE RESOURCES OF THE ENTERPRISE AND BANK CREDITS IS MOST PROMISING. However, here it is important not to give the enterprise complete control over major construction. Otherwise the centralized influence of the state on expanding reproduction may decline.

The fourth issue is payment for resources.

THE DEVELOPMENT OF COMPLETE COST ACCOUNTING IS CLOSELY RELATED TO WORKING OUT A PROFIT DISTRIBUTION SYSTEM, including clarifying the role of payment for funds.

Various viewpoints are expressed. Often economists believe that if the enterprises earns the monies this payment loses its importance. They assert that payment must not be taken out of monies earned by the collective itself.

But it is entirely reasonable to argue that it is necessary to take into account that the producer goods formed in the enterprise are essentially obtained by them at no cost. Moreover, the state should lay certain claims to the level of utilization of producer goods. This position seems more correct.

The problem of payments for labor resources also remains unresolved. It is entirely clear that the level of wages does not reflect the resources which are really directed by the state for reproduction of the work force. Therefore, FOR MANY ENTERPRISES THE COSTS OF LIVE LABOR ARE TOO CHEAP AND THEY HAVE NO PARTICULAR INTEREST IN INTRODUCING NEW EQUIPMENT.

Apparently, the policy of substantially increasing expenditures of the enterprise in the form of social insurance should be continued.

Improving the Organizational Structure of Management

Improving the economic mechanism assumes that a corresponding restructuring should also take place in the organizational structure of management. The main task here is TO GIVE MANAGEMENT MODERN ORGANIZATIONAL STRUCTURES which take into account tendencies of concentration, specialization and cooperation of production.

In accordance with the decisions of the 27th Party Congress, work is being carried out to create administrative organs of complexes of interrelated branches, as well as of scientific-technological inter-branch centers, and various associations and territorial production formations.

It is important to emphasize the following aspect. Expanding the independence of enterprises and associations and strengthening their economic responsibility for the results of their work are senseless without restructuring the basic link. It is entirely obvious that in fact only a major enterprise, which is capable of being restructured in a timely fashion, introducing new equipment and orienting itself on the highest worldwide achievements can in fact truly be independent and responsible for its activities.

Such work has already been developed. In machine building, for example, decisions have been made about shifting to new general management models. In all 11 machine building ministries the main form is now the direct subordination of major enterprises and association to the apparatus of the ministries. All-union industrial associations, as a rule, have been eliminated.

The main significance of these measures is precisely that the apparatus of the ministry manage the activity of enterprises and associations by economic methods and not interfere in deciding their operational issues. Each enterprise can and must work with a higher administrative organ, but only on the principle, basic and strategic questions of its development.

Obviously, such a restructuring should be carried out in all other branches of the economy. Of course, in so doing the specific nature of each branch will be considered. In all this work it is important to ensure the creation of truly effective production and scientific-production associations, take into account the specific nature of their work and their territorial distribution, and avoid formalism in such an important matter.

Improving the economic mechanism in these directions and working out the forms and methods of the economic management system will make it possible to implement the instructions of the 27th Party Congress for accelerating the development of our country's economy.

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PLANNING AND PLAN IMPLEMENTATION

GOSPLAN ECONOMISTS URGE BETTER USE OF PRODUCTION CAPACITIES

Moscow PLANOVYE KHOZYAYSTVO in Russian No 1, Jan 86 pp 90-94

[Article by N. Novikov, candidate of economic sciences, subdepartment chief at Gosplan USSR, and O. Ilin, candidate of economic sciences, deputy subdepartment chief at Gosplan USSR: "Make More Effective Use of Production Capacities"]

[Text] A key problem of national-economic intensification is improvement in the use of the created economic potential, first of all its active part--production capacities. The Soviet economy as a whole is distinguished by a high load level. In many sectors it amounts to more than 90 percent and in the coal sector, in a number of ferrous-metallurgy processes and production operations of the timber and pulp-and-paper industry as well as machine building, food and meat and dairy industry--to more than 95 percent.

During the 10th Five-Year Plan, a significant growth of production was obtained through improvement in the use of production capacities. For each its third forms, it was equal to 10 percent and for the fourth to 20 percent. Thanks to this factor, growth in the output of metal-cutting machine tools was 52 percent, rolling equipment--21 percent, pig iron--23 percent, steam turbines--24 percent, plastics--46 percent, sawn timber--67 percent.

During the current 5-year plan, such production growth in accordance with plans should be not less than 10 percent in many sectors, 20 percent in approximately three-quarters of them, 40 percent in more than a third and 60 percent in each sixth sector. Thus production growth because of a fuller load of capacities during the 11th Five-Year Plan was designated higher than during the 10th Five-Year Plan. This attests to the fact that provision was made in the plans for an orientation toward primarily intensive production growth factors. But what was planned could not be fully realized.

During the 8th and 9th Five-Year Plans growth plans of industrial production were fulfilled despite considerable underfulfillment of targets for the startup of new capacities. Production growth turned out to be higher than the startup of corresponding production capital, which attests to more intensive use of previously accumulated capacities. As a result, by the end of the 10th Five-Year Plan reserves were exhausted to a significant degree.

During the 10th Five-Year plan, production growth was almost completely regulated by the startup of new capacities. Growth was found to be below startup. At the same time, an absolute reduction of capital investment compared to the 9th Five-Year Plan took place. This could not but help affect growth of disconnectedness and disproportions in the raw-material and processing sectors, which in turn led to a lower level in the use of capacities, growth rate of labor productivity and other technico-economic indicators.

In recent years, due to improvement of management, strengthening of state and labor discipline, a stronger influence of the plan on capacity load level, development of plan balances and calculations and establishment on their basis of intensive targets, it was possible to boost the yield of the production potential in a number of industrial sectors. This is shown by the fact that by 1983 compared to 1980 the number of basic types of products with a more than 95-percent use of capacities almost doubled and dropped with the level of their load to 90 percent.

At the same time, for a number of most important varieties of products, deviations occurred from the prescribed targets of the 5-year plan. The biggest of them were in the chemical industry, individual machine-building operations and the construction materials industry.

In 1983 compared to 1980, reduction in the use of capacities for production of steel pipe amounted to 2 points, fibers and synthetic thread--3 points, gas turbines--5 points, main-line diesel locomotives--2 points, trucks--7 points, knitted underwear fabric--3 points and granulated sugar--2 points. Furthermore, there were significant deviations from targets for the development of capacities for the mining of coal and production of pig iron, steel, rolled metals, potassium fertilizer, synthetic ammonia, forging and pressing machines, cement, for transportation of timber and others.

Consequently a further increase is required in the yield of the production potential, improvement in the practice of planning reproduction of capacities, better quality in the working out of their balances by ministries, departments and enterprises in preparation of plans of economic and social development.

The initial element of national-economic planning is determination of existing capacities. In Basic Provisions for Calculation of Production Capacities of Existing Enterprises and Production Associations (Combines) approved in 1983 by Gosplan USSR and the USSR Central Statistical Administration and in the sectorial instructions worked out on their basis, special attention is paid to the normative base.

It is important that norms and normatives are periodically made more precise, taking into consideration employment of advanced equipment, technology and the most perfected labor organization and rise in the level of mechanization and automation of production. Moreover, normative indicators of productivity of equipment of the same design in the use of raw materials and fuel of the same quality and production with this equipment of identical types of products should be unified for all enterprises of a given sector.

The norms of labor intensiveness of a product unit are required to be determined in accordance with targets for growth of labor productivity and planned reduction of labor intensiveness in connection with putting more progressive equipment in operation, improvement of existing and introduction of new technological processes and improved organization of production and labor. It is also necessary to take into account the average percentage of norm fulfillment attained in the reporting year by leading production workers. At the same time, it is important to keep in mind that higher labor intensiveness should not be considered in calculations of capacities during the assimilation period.

There must be thorough substantiation in the selection of leading equipment for basic production. Frequently, several variants are designated in sectorial instructions. As a matter of fact, such practice provides an enterprise with the possibility of alternative selection of leading equipment. An enterprise frequently on getting a less intensive plan unobjectively assesses and deliberately reduces the capacity, calculating it on the basis of a weaker position. In this connection, the elaborated sectorial instructions should concretely show an enumeration of leading equipment on which the basic operations of decisive importance for ensuring the output of finished products are performed in sectors where a considerable portion of machines is concentrated or the biggest share of aggregate labor is expended. The selection of equipment is done on the basis of data on labor intensiveness, technological processes, cost of basic production capital and other indicators specific to this or that sector.

It is required to approach more strictly the determination of the amount of equipment, taking capacities into consideration. Frequently that part of it is not taken into account which was installed in recent years and also that which is in warehouses but is scheduled to be put into operation in the accounting period or is installed above norm in auxiliary shops or in sectors. In working out balances of production capacities, cases occur where only 50-60 percent of all the equipment is taken into consideration. All this results in distortion of capacity size and the indicators of its actual use. An inaccurate picture is created of the true state of affairs and leads to adoption of improper decisions.

In the process of working up long-term and current plans, more active use is needed of use coefficients of productive capacities. In existing practice, they possess an subsidiary character, fulfilling only control and analytical functions. Here the circumstance is felt that production volume is first set and then, on the basis of the planned product mix, capacities are determined and the necessary measures are worked out for their growth for the fulfillment of the set target for increasing the production volume in the planned period. The use coefficient of production capacities is a calculated value both in annual and in 5-year planning. Such an approach does not fully correspond to the need of accelerating production intensification and does not create conditions for purposeful working out of measures ensuring a valid rise of the coefficient and consequently of the capacity use level. It also does not contribute to more intensive plan production targets and results in exaggerated requests for capital investment. Moreover, such practice brings

about uneven and unfounded hiking of capacity load toward the end of the planned period.

A more justifiable approach appears to be one in which the elaboration of plan decisions is based on the existence of operative capacities, determination (while taking into account a valid factor count) determination of their uses, determination of possible production of products at existing capacities. As for newly operative capacities, such decisions are based on the planned output of products and the establishment for the end of the planned period of required startup of capacities (taking into account norms of assimilation).

Thus, the size of the coefficient is formed on the basis of optimization of variants of capacity development, keeping in mind introduction of new types of products, boosting of their quality and removal from production of obsolete items. Measures need to be worked out for the solution of the designated tasks and elimination of weak spots. The coefficient of capacity use must be planned while taking into account their sales/realization. Its size during the studied period is established on the basis of the need of attaining an upper limit to the use level of capacities and determination of their reserve.

The urgency of forming capacity reserves is due to the complication of production processes, wide-scale introduction into production of achievements of scientific and technical progress and increased interdependence of enterprises and organizations. Reserves can also fulfill the role of a kind of compensator of unevennesses of startup and delays in the assimilation of associated capacities. They present temporarily unused potential production capabilities created in a planned manner among material public funds for ensuring continuous socialist reproduction (on a higher scientific and technical level).

Taking into consideration the importance of creating production-capacity reserves, it is considered useful at the present time to provide for them in compilation of long-term and annual plans. But in practice, forming of reserves runs into certain difficulties. They are connected first of all with the fact that intensification of public production dictates the need for maximal utilization of capacities and reduction of means of labor not taking part in the production process. Furthermore, the reduction of investment activity is complicated by the solution of the question of allotment of additional capital investment for the creation of capacity reserves. A standardized approach providing a single principle of forming reserves for all sectors does not have this for its aim. The elimination of such difficulties is bound to contribute to improvement of planning practice. Specifically, in working out a balance of production capacities, their average annual size and use level must be calculated while taking reserves into account. Moreover, it is important to specify in a differentiated manner the size of the latter for the entire chain of associated production operations for sectors on the basis of the established normative size.

In determination of reserve capacities there should obviously be kept in mind the top priority of their formation in those sectors where products are unsuitable for prolonged storage (heat and power industry, gas industry), that is, there where reduction of production can cause a reduction or breakdown of

production processes in other sectors of the national economy. This also applies equally to sectors with seasonal production, particularly processing of original agricultural raw materials. Reserve capacities in the raw-material and processing sectors--of the coal, chemical and petrochemical industry and in ferrous metallurgy--should be created for the purpose of preventing possible interruptions in the operation of basic technological equipment as well as disproportions and disconnectednesses in the development of related sectors and production operations.

A balanced approach is also required in the formation of reserve capacities in machine building. Taking into consideration their considerable underuse, it is important first of all to provide for reserves by raising equipment shift coefficients.

Reserve capacities are needed for different structural production elements--from enterprises to sector. The fact is that for overcoming unforeseen difficulties, temporarily idle equipment of the same type of closely located enterprises of different sectors can be actively used.

Formation of reserves contribute to the solution of the task of validating proposals on limits of capital investment and creation of new capacities on the basis of the existing use norm advanced by the decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning, Organization and Management of Capital Construction." The latter can be formed as the difference between the capability of means of labor for maximal output of products and the reserves of production capacities.

The creation of reserves for the prevention of disproportions and disconnectednesses requires simultaneous and more thorough working out of questions relating to balanced development of capacities. Their balancing is dictated by the need of raising the productivity of socialized labor and satisfying the needs of the national economy for specific types of products.

The solution of such problems largely depends on the observance of a certain correlation both of large production operations and of individual machines. K. Marx wrote that "in a dismembered system of machines, in order for some partial machines to continuously provide work for other partial machines, a certain ratio is required between their number, size and speed of operation" (K. Marx and F. Engels, "Soch." [Works], Vol 23, pp 391-392).

In the current economic literature, various points of view exist on the question of correlation and balance of growth of production capacities. The most detailed studies are in our view the work results of the Department of Rates and Proportions of the Institute of Economics and Organization of Industrial Production of the USSR Academy of Sciences' Siberian Department. At the same time, the absence of a solution to a number of methodological and practical problems of balance requires their further and deeper elaboration.

At the present time, in balancing of state plans, a system of material balances is being formed and proportions are being established between the production of any product or item and the scale of production in the sectors using this product or item. Thus, the state plan is balanced by Gosplan USSR

for production. However, a true balance means correspondence and correlation not only in production but first and foremost in capacities.

An important task is analysis of the actually developed balance level and determination of the scale and ways of eliminating disproportions arising as a result of stoppages in operation of equipment or deficiencies in investment work.

In preparing plans of economic and social development and of measures for improving use of capacities, it is important to strive for proportionality and balance of public production both as a result of increased production output on the basis of a fuller load of the created production potential and as a result of rationalization of consumption norms, intensification of the regime of economy, acceleration of development and introduction of energy and resource conserving equipment and technology. Special attention should be paid to sectors and types of production whose products satisfy the needs of the national economy through the greatest possible intensiveness.

The ways of accomplishing these tasks are largely determined by the specific sectorial character. In particular, in the coal industry, it is tied to the need of additional sinking and operation of vertical and inclined shafts and a significant rise in the level of conveyance capability of conveyor systems of lifting transport for horizontal workings. The preparation of cleaning lines for stopes, opening up of deposits at new levels and modernization of surface technological complexes are of great importance. At the same time, it is necessary to improve the use of power capacities primarily through accomplishment of measures for conversion of boiler units to burning of gas, modernization and reequipping of electric power stations, additional introduction of power transmission lines in order to make consumption of fuel and power resources more efficient.

For balancing of capacities for recovery and refining of petroleum and gas, it would be useful to implement measures aimed at their maximum utilization in the opened up regions. Fullest possible loading [dozagrúzka] of units for stabilization of petroleum and better use of units for its demineralization are also necessary.

Correlation between production capacities of sectors of the structural materials complex and the processing sectors is acquiring special importance under present conditions. In this connection, requirements are growing for use of capacities in ferrous metallurgy and the chemical industry.

In ferrous metallurgy, disproportions will have to be overcome between production of raw iron ore, coke and the capacities of subsequent metallurgical processes and the lag of iron-ore and coke-oven production facilities. Underutilization of capacities in ferrous metallurgy is largely connected with a high level of wear and growth of equipment. Under these conditions, the problem of modernization and reequipping of enterprises and accelerated renewal of fixed capital, which depends on provision of the sector with modern metallurgical equipment, is aggravated. Thus the importance of correlation of development and utilization of capacities of this type of heavy machine building is growing.

Improvement of the use of capacities for production of structural materials must be accompanied by the development and implementation of measures for their more efficient load in user sectors. This is first of all connected in machine building with the necessity of improving the structural and qualitative features of progressive types of rolled metal supplied for the sector and improvement of its assortment through expanded deliveries of more economical types of metal products.

The disproportions that have developed in the machine-building complex exert a negative influence on the use of the machine-tool park. According data of the USSR Central Statistical Administration, 15 percent of the equipment remains idle annually because of this. The cause lies basically in lack of correlation of finishing production facilities, warehousing operations and a low organizational and technical level in casting, painting and blank-preparation shops. Consequently, it is necessary to strengthen intraplant relations, to partially or completely respecialize capacities, to additionally create them in blank-preparation shops and to increase the level of standardization of products and specialization of production.

In the current 5-year plan, a tendency has emerged of improving the use of capacities in sectors of the agroindustrial complex. But in connection with the absence of correlation of individual subsectors, the existence of weak spots and disruption of proportionality in regional development, their load in production of the most important types of products still remains low. Lack of balance between the production volume of fodder and the number of livestock has a negative effect on efficiency of use of capacities in animal husbandry.

All this demands special attention in preparation of long-range plans in regard to change of proportions of capital investment and its first-priority allocation for the development of a fodder production base, improvement in the use of machines and units, improvement of raw-material zones and the elimination (taking into account the seasonal character of milk production and livestock rearing) of lack of correlation of the agricultural and processing sectors.

The restoration of balance is basically connected with the need of developing and implementing measures for the elimination of negative consequences caused by lack of correlation in startup of capacities, changes in operational conditions and unevennesses in introduction of the achievements of scientific and technical progress and advanced methods of labor and production organization.

Taking into consideration the importance of restoration and maintenance of balance, it is necessary to work these questions out more qualitatively in long-term plans.

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INDUSTRIAL DEVELOPMENT AND PERFORMANCE

BELORUSSIAN GOSPLAN EXPERTS EVALUATE EXPERIMENT

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[Article by A. Kovtunenکو, chief specialist of Gosplan BSSR, and S. Krichevskiy, candidate of economic sciences, Minsk: "The N Index and Production Quality (Certain Conclusions from the Experiment in Belorussian SSR)"]

[Text] A most important task of the economic experiment is raising the technical level of production and improving the quality of manufactured products. For its accomplishment, the rights and reequipment possibilities of enterprises have been significantly expanded.

Beginning with 1984, planning the resources of the production development fund was separated from planning of state capital investment. Production collectives acquired real rights in the use of this fund. The possibilities of reequipment of enterprises by means of the economic method were expanded. Such operations are provided with material resources as a first-priority procedure. The stimulating effect of measures designated by the experiment activated the initiative of enterprises in the search for effective directions of modernization of production and contributed to an increase in the scale and acceleration of the rate of scientific and technical development.

In 1984, at enterprises of the BSSR Ministry of Light Industry due to reequipment, the labor of more than 3,500 persons was saved, an increase of more than 70 percent was achieved in labor productivity and cost per ruble of commodity production was reduced by 0.5 percent. Output of products of the highest category of quality increased by 18.4 percent and 1.4-fold with the N index. Product assortment renewal level reached 73 percent.

At the same time, analysis of the operation of the sector shows that not all problems relating to the scientific and technical development of production and improvement of product quality found a final solution.

Financing of the creation and starting up of manufacture of new products needs to be further improved. At the present time, all expenditures connected with this type of activity is planned to be defrayed with capital from the unified fund for development of science and technology of the BSSR Ministry of Light Industry. But in practice, of the entire group of expenditures preceding

series production of a new product, the resources of the fund were spent only on the creation of new models of products. Expenditures on the preparation and establishment of production of developed products were covered by enterprises in 1984 with resources from the central fund for development of the output of new products of the USSR Ministry of Light Industry and from profits left for their disposition from manufacture of N-index products. Moreover, the share of the latter source in the total volume of such outlays amounted to 80.3 percent. It is also necessary to note that half of the capital expended from the unified fund for development of science and technology for the creation of new items was part of that third of the fund which the ministry returned to enterprises. Calculations show that in 1984 a total of 78 percent of the expenditures connected with the creation and establishment of production of new products was directly paid by the associations and enterprises.

Hence it follows that under the conditions of the experiment production collectives are capable of independently financing the development and setting up of production of new items. Profit obtained by enterprises from fabrication of N-index products could serve as a source for the formation of funds required for this. In 1984, their share in the total amount of such profit was transferred by the BSSR Ministry of Light Industry into the budget and amounted to only 5.9 percent.

At the same time, it would appear advantageous to unite at the enterprises' level all money spent by them on reequipment, modernization, creation and setting up new production and to bring it together into the fund for development of production. This is in accord with the decree of the CPSU Central Committee and the USSR Council of Ministers "On Wide-Scale Dissemination of New Methods of Management and Increasing Their Impact on Acceleration of Scientific and Technical Progress." In accordance with the decree, heads of enterprises are given the right to reallocate monetary resources, funds for the development of production and money allotted for their disposal from the unified fund for development of science and technology. The concentration of money in one fund will increase the independence of enterprises in making new products, reduce finance operations and eliminate artificial separation of resources allotted for the payment of costs connected with the output of new products from money of the fund whose task is acceleration of reequipment, creating for renewal of products.

But unresolved problems also exist in the financing of reequipment and modernization of enterprises. Analysis of directions of use of the unified fund for development of science and technology shows that 96 percent of its amount in 1984 was used by the ministry for scientific-research, experimental-design and technological work of which two-thirds was of a sectorial character. But this money because of the insignificance of its amount and purposeful direction did not become the necessary basis for the implementation of a unified technical policy. For this reason, 11.6 percent of the total amount of the fund for development of production was additionally centralized.

Moreover, the ministry, despite the independence granted enterprises in the use of the fund for development of production as before engaged in its reallocation, which significantly reduced the cost-accounting principle of financing reequipment specified by the conditions of the economic experiment.

This occurred for two reasons. The first was the absence of a close connection between the objective needs of enterprises for monetary resources for the renewal of fixed production capital and norms of deductions into the fund for development of production. As a result, the BSSR Ministry of Light Industry in addition to the previously centralized sum took from enterprises another 11.7 percent and reallocated 10.8 percent of the total amount of the initially charged fund. It would appear that ministries transferred to the new conditions of management need to take into account this negative experience and even in the development of methodological and normative documents try to see to it that norms for the formation of a fund for the development of production are differentiated depending on the technical state of production capital.

The second reason was the inadequate initial size of the centralized money. The ministry reallocated among enterprises an amount exceeding by a factor of 2 the centralized fund. Consequently, under conditions where deduction norms had not been made dependent on the technical state of fixed production capital, it was necessary for the BSSR Ministry of Light Industry in order not to upset the independence of enterprises in the use of the fund for the development of production to create a twice as large centralized fund. But this contradicted the methodological documents.

An important source of needed money could be amortization deductions for full restoration of fixed capital, especially since its centralized portion is returned in almost the same amount to enterprises in the form of state capital investment. It would be practicable to include in the fund for development of production all amortization deductions for renovation first of all at enterprises carrying out comprehensive reequipment. Such a measure would contribute to the solution of the problem of underutilization of amortization deductions and at the same time ensure an increase of 84.7 percent of the fund for the sector's production development. As a result, reequipment and modernization would be accelerated.

The accomplishment of large-scale reequipment measures requires significant one-time capital outlays. Existing procedure of formation and utilization of the fund for development of production, taking into consideration the described proposal, would make it possible for enterprises to accumulate over the course of a certain period considerable monetary resources. But from the position of accelerated renewal of the sector, this is not always justifiable as the enterprises lagging in a technical sense have extremely low amortization deductions, but they need to be reequipped first of all. At the same time, it is important to take into consideration that comprehensive reequipment of production is not being conducted simultaneously at all enterprises. For the 12th Five-Year Plan, for example, such work is planned at 16 enterprises of the BSSR Ministry of Light Industry, which amounts to 24.2 percent of their total number.

Consequently, a significant role in reequipment of the most backward enterprises belongs to the sectorial fund for the development of production under the condition of an increase in its amount. It would seem advantageous to create from deductions from profit of enterprises such a sectorial fund as would provide real help to enterprises in need of accelerated reequipment.

Such a measure is justified by the fact that the production potential of enterprises modern in a technical sense would be created not only by their collectives but also by society.

The problem of introduction of new equipment lies both in acceleration of its rate and in overcoming the extensive character of renewal and elimination of the gap between considerable startup of new fixed capital and small retirement of obsolete fixed capital. Expansion of the scale of production renewal will not solve by itself the problem of intensification if the equipment going into replacement of retired equipment will not be significantly different from the former and will not ensure a significant improvement in product quality. Products of enterprises of the USSR Ministry of Machine Building for Light and Food Industry and Household Appliances still do not fully satisfy the needs of buyers either in a qualitative or in a quantitative sense. In 1984 requisitions of the BSSR Ministry of Light Industry for equipment were satisfied 76.4 percent, textile enterprises--81.8 percent, leather-footwear--55.2 percent, sewing-goods--92.9 percent. At the same time, proposed models of new equipment far from always embody the most progressive solutions.

Growth of equipment cost has been significantly outstripping growth of its productivity. Thus the price of a STB-1-250 loom is 13 times higher than of that of the replaced AT loom, but its productivity is only 2.2-fold higher. the new 330-8KL sewing machine is 2.3-fold more expensive than the replaced 34KL machine, but its productivity is only 12 percent higher. Newly adopted equipment by the USSR Ministry of Machine Building for Light and Food Industry and Household Appliances does not possess significant advantages compared to existing equipment. For this reason, enterprises of the BSSR Ministry of Light Industry frequently instead of replacing old machines restrict themselves to the installation of new ones next to them. As a result retirement of equipment averaged only 2.2 percent for enterprises of the ministry, which is one-half that for the industry as a whole.

A significant increase in the responsibility of machine builders for their products and interest in improving their operational characteristics would contribute to the accomplishment of the proposals of the BSSR Ministry of Light Industry for forming a production plan for the USSR Ministry of Machine Building for Light and Food Industry and Household Appliances on the basis of interrepublic markets for selling the products.

In analyzing tendencies of the sector's technical development under the conditions of the experiment, it is necessary to direct attention to the high output growth rate of index-N products. It is enough to note that the plan target for increasing the output of such products was fulfilled 1.5-fold. As a result, deductions into the material-incentive fund for this source grew 40.3 percent and amounted to 47.6 percent of the total amount of deductions going into incentive funds. In absolute size, they exceeded eightfold the amount of incentive deductions for plan fulfillment, taking into account delivery, the wage fund--fortyfold and for reduction of production cost--253-fold. They defrayed many times the size of fines for return by trade of low-quality products. The fast output rate of index-N products thus ensured the largest deductions into the material-incentive fund.

At the same time, analysis of materials of checks of the BSSR Ministry of Trade obliges us to have some doubts concerning such a rapid rate of improvement of the republic's light industry production quality. In 1984, wholesale bases of the BSSR Ministry of Trade reduced to lower grades and returned for rectification 8.3 percent of footwear, 6.7 percent of knitwear, 6.3 percent of sewn goods and 5.7 percent of socks and hosiery. The relative share of products of lower grade for the enumerated groups was insignificantly reduced compared to 1983 (0.3-0.6 percent) and for socks and hosiery even increased 1.2 percent. Trade organizations returned to manufacturers a total of substandard qualities in the amount of 5 million rubles, which constitutes 5.8 percent of the total quantity of checked items. The amount of fines for lowered grade and wrong quality was reduced by a total of 10 percent.

But the desire to have index N conferred on an item, ensuring a price increase and deductions into the material-incentive fund, is not reinforced by many enterprises with serious measures relating to the organizational and technical revision of production and all-out improvement in the assortment of production output. As a result, demand for the products of these enterprises is being reduced. Thus at a 1986 wholesale fair for the sale of fabrics, Vitebsk Silk-Fabric Combine failed to sell 1.5 million linear meters, or 5 percent of the annual production volume. Grodno Fine Cloth Combine could not find buyers for 610,000 linear meters of fabrics, which amounts to 15 percent of the volume of proposed production. At the same time, renewal of assortment frequently consists of improving secondary properties of items. Thus half of the assortment of fabrics acquired the N index only for putting in a new design. The ease with which many items acquire the N index after insignificant modifications attests to a lack of reliable and objective criteria in the system of certification of a sector's products, which has replaced since the start of the present year the state system of certification for categories of quality.

Under these conditions, many enterprises are inclined to utilize the stimulating impact of a given measure as the most accessible means of improving economic work indicators. It has become necessary to regulate and tighten requirements on products aspiring to the N index. It would be worthwhile to work out a sectorial procedure for certification of products efficiently regulating the principles and methods of assessing their quality. The method should provide an organizational comparative assessment of the quality of domestic and the best world examples of products. In those cases where it is impossible or unfeasible to make a direct comparison, it becomes necessary to employ on a wide scale expert methods of analysis. At the same time, the role of representatives of trade organizations should grow significantly. An effective method of appraising quality could be approbation of promising models (of individual products or experimental batches) by the actual user.

It is necessary to expand and systematize study of the population's demand. Today there are only 2 firm stores and 21 firm sections operating in the republic. But items that have been produced for a long time predominate in their commodity turnover. For many important types of light-industry products, a systematized analysis of demand is simply not being conducted.

The system of material incentives for improvement of product quality is in need of further improvement. A number of problems are due to disparity between interests of production collectives taking care of different stages in the life cycle of products. For the elimination of this defect, it would be useful to work out a system of proportional division of additional profit formed from incentive price hikes for new goods of improved quality among developers, producers (of semifinished and finished products) and trade.

In addition to improvement of incentives for improving product quality, it is necessary to make penalties more strict for collectives of enterprises and individual workers for production of defective output. Measures of punishment for producers of defective output designated in the conditions of the experiment are not resulting in the necessary effect. Thus in 1984, a total of 31 enterprises and associations, due to returns of poor quality products amounting to a total of 5 million rubles, the material-incentive fund was reduced by only 295,000 rubles. For footwear enterprises, reduction of deductions amounted to 3.9 percent of the planned level and for sewn goods-- 0.8 percent.

Certain questions of product-quality improvement are of a complex intersectorial character. Their solution requires an integrated, systems approach on the scale of the entire national economy. In this connection, experimental approbation is needed of new forms and methods of control over product quality not only in the sectorial context but also in the sectorial technological chain (raw material--semifinished product--finished item) according to the stage of the life cycle of an item (development--fabrication--sale--maintenance) within the confines of the economic region.

Improvement of the economic mechanism under the conditions of the economic experiment has contributed to significant successes in the sector's scientific and technical development and improvement of the quality of production output. The search for new and more efficient forms of management will ensure the retention and increase of what was achieved and full use of the possibilities being opened up.

FROM THE EDITORS. In the published article, the authors touch on certain current questions of technical improvement of production, production quality and output of N-index items. Attention is directed to the big gap between growth of prices for new equipment and its increased productivity as well as the ease with which the N-index is awarded to products, although they have not undergone significant changes. In this connection, the reaction to questions raised by the BSSR Council of Ministers and the USSR State Committee for Prices is of interest.

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RESOURCE UTILIZATION AND SUPPLY

RESOURCE CONSERVATION DISCUSSED AT CONFERENCES

Secondary Resources

Moscow PLANOVYE KHOZYAYSTVO in Russian No 4, Apr 86 pp 110-115

[Article under rubric "Round Table Meeting": "Economic Problems of Resource Conservation"]

[Text] In January 1986 a round table meeting was held at the Institute of Economics, USSR Academy of Sciences. The meeting was organized by VOPROSY EKONOMIKI with the participation of PLANOVYE KHOZYAYSTVO. In the course of the discussion, the participants of which were workers from USSR Gosplan and ministries, and associates from scientific and higher educational institutions, recommendations were made with regard to problems of improving resource conservation. Certain materials pertaining to the discussion are published below in abridged form.

Opening the meeting, editor in chief of VOPROSY EKONOMIKI, Academician T. S. Khachaturov, remarked that, in conformity with the tasks posed in the Basic Directions for the Economic and Social Development of the USSR, questions of the saving of material resources are of great importance. Expenditures of raw and other materials, fuel, and energy constitute, as is well known, three-fourths of the total expenditures for the production of industrial output. The possible saving of those resources, the reduction of expenditures per unit of output, constitutes one of the sources for accelerating the growth rates of the national economy.

During the period of 1986-1990 it is planned to economize 200-230 million tons of organic fuel and 12-14 percent of rolled ferrous metals. The saving of expenditures is a very important indicator of the intensification of production, an indicator that requires the nationalization of production, the changeover to technological schemes with little or no waste products, and the reduction of losses. During the discussion of problems of resource conservation it is important to clarify the following three problems.

First, the economizing of raw materials and fuel to be extracted. Our country is rich in all types of them, but they are not limitless. With the passage of time it will be necessary to extract them from greater depths, to use resources of lower quality, and to transport them from more remote areas. All

this requires tremendous expenditures. Therefore it is necessary to make efficient use of the natural resources and to expend them economically, guaranteeing them both for the present generation and for future ones.

During the discussion it is necessary to indicate how to resolve this important task. It can be a question of improving the technological scheme of production, say, as applicable to ferrous metals, the changeover to the continuous smelting of steel, precision casting, increasing the production of rolled steel, the production of articles by pressure and to a lesser degree by cutting. We need a comprehensive approach to the development of sources of raw materials and to their delivery. It is inadmissible, for example, that lumber camps attempt to fulfill the plan for timber procurements although the timber that has been cut down is not removed because insufficient railroad cars are provided; the timber rots, but they continue to cut it down in the previous volume. A factor of special importance is the guaranteeing of the intactness of the raw and other materials, and of the finished output. We do not have sufficient warehouses, elevators, and refrigerator plants, and as a result we lose a considerable amount of valuable agricultural output -- potatoes, vegetables, fruits, and grain. Expenditures for the development of the production infrastructure would repay themselves rapidly, but insufficient funds, materials, and manpower are being allocated for this. Certain economic managers do not consider such types of construction to be prestigious. Storage bases are situated unsatisfactorily, and frequently they are situated in cities, rather than at the producer's location, etc.

The second question pertains to measures for improving the use of secondary raw materials. Large amounts of production by-products, scrap, and waste products are formed in our country. They could be used effectively in production. There are large amounts of waste products in the timber and wood-processing industry. They could be used to produce millions of tons of fiberboard for the production of finished output.

Finally, the question of eliminating losses of material resources. These include losses of fuel and energy, losses during the mining of ores and their valuable components that go into the tailings, brick, glass, and other building materials and sanitary-engineering materials, agricultural output, etc. These are direct losses and there is a very large quantity of them. The problem is one of being extravagant in expending material resources, and one of the lack of concern for their economic use.

N. Bogatov (deputy department chief, USSR Gosplan). The analysis of computations and the design resolutions with regard to the application of metal products produced by eleven machine-building ministries has shown that the increase in their scientific substantiation makes it possible to reduce the metal-intensity of the machine-building and construction output, on the average, by respectively 15 and 30 percent.

The assignments established for the 12th Five-Year Plan for the saving of metal in the machine-building branches, and also in construction, should be considered the minimal ones; an analysis of the plans for the manufacture of finished output makes it possible to define the principles of formation of the efficient structure of metal consumption in such a way that one part of the

efficient variety of the metal output can be manufactured at existing metallurgical enterprises within compressed periods of time, and another part can be manufactured after the appropriate improvement of the technology and technological schemes in metallurgical production. In other words, the real opportunities for the saving out output depend upon the growth rates of scientific-technical progress in ferrous metallurgy. In order to accelerate the growth, it is necessary to have changes in the technology and technological schemes. The expenditures linked with the creation and assimilation of the new technology are compensated from various funds on a nonreimbursable basis.

The effect of the economical methods of administration upon the acceleration of the rates of scientific-technical progress can be intensified on the basis of the further development of the principles of the shared distribution of profit. The quotas for the distribution of profit must be formed on the basis of the appropriations allocated for production and nonproduction construction: the total amounts of incentive funds in the overall volume of profit. The principle of shared distribution of profit creates the necessary conditions for the harmonious combination of the social, collective, and personal interests. The greater the saving of material resources, the lower the production costs and the greater the volume of profit. Simultaneously there is an increase in the share of deductions from profit to be paid into the state budget, and the amount of those deductions that remains at the disposal of the enterprises. Thus, the saving of resources makes it possible to expand the opportunities in resolving the nationwide tasks and creates the conditions for the broad use of the rights and duties of the production collectives in supporting the resolution of social problems.

The manufacture of output with reduced metal-intensity influences the technical-economic indicators of its production and reduces the specific productivity of the metal-cutting machines and units in terms of tonnage, and this leads to a reduction of the overall volumes of metal production. With the decrease in metal-intensity, there is a reduction in the material expenditures in metallurgical production, the volumes of the transferred value of semifinished goods onto the value of the finished output, and, correspondingly, the volumes of gross output, sold (with a consideration of the contract pledges) output, and commercial output. When using one of the named indicators to carry out the measurement, there is a reduction in the labor productivity, and this leads to a distortion of the true nature of the development of metallurgical production.

As a consequence of the reduction in metal-intensity, there is actually an increase in the volume of production of output in linear measurements or in measures of area. As a result of the reduction of material expenditures, when there is an increase in metal production there is an increase in the volume of newly created value and thus there is a more complete satisfying of the need of the national economy for metal output. This contributes to the increase in the effectiveness of metallurgical production as a whole. Therefore, in the planning of production and in the distribution of the metal output, instead of weight measurements it is necessary to employ linear ones, and for sheet-metal output, measures of area. It is more efficient to define labor productivity on the basis of net output.

The scientific-technical and economic measures being carried out in the process of planning and administration of material-intensity will be effective only if they are reflected in the plan for the economic and social development of the national economy. The execution of the functions that coordinate the interaction among the branches and departments in questions of the economizing of material resources can be realistically carried out by USSR Gosplan.

V. Odess (deputy administration chief, USSR Gosplan). Every year approximately 5 billion tons of waste products accumulate in the national economy. Today they constitute approximately 55 billion tons and occupy more than 4 million hectares of agricultural land.

The work with secondary resources in the country has been limited basically to the traditional types of waste products being procured (collection of waste paper, bones, broken glass, worn-out tires, and textiles from the public). In 1980 the resolution of this problem began to receive broader development, and starting in 1981 the plans for the economic and social development of the USSR and for the ministries and departments have had a new section -- "Use of Secondary Raw Materials."

Centralized planning of the use of secondary raw materials required the creation of a products list for waste items. USSR Gosplan and USSR Gossnab created such a products list, and approved more than 200 products-list groups of waste products which must be the object of centralized, branch, and republic planning.

The State Plan for the Economic and Social Development of the USSR in 1986 contains the approved assignments for the processing of 33 types of waste products. This is the initial phase of the work. It is necessary to implement the planning assignments, to bring secondary raw materials into economic circulation, to free the corresponding types of primary raw and other materials, and to increase the production of output.

In 1985, as a result of the use of waste products, approximately 12 billion rubles worth of primary resources were freed. Computations indicate that in the 12th Five-Year Plan the expansion of the scope of involvement of secondary raw materials will make it possible by 1990 to provide an increase in the volumes of the freed primary raw and other materials by 14-15 billion rubles, and by 2000 by 23-25 billion rubles. Is that a lot or a little?

According to our computations, for the 40 most important types of secondary resources (interchangeable with primary ones) the share of the freed primary raw materials with respect to the material resources being expended for the USSR as a whole constitutes approximately 15 percent. However, this is insufficient to resolve the problem. Therefore by 2000 it is planned to increase that indicator to 18-20 percent. The reserves exist here. For example, according to 1985 data, the use of waste paper constitutes approximately 65 percent, but by 2000 will increase to 75 percent. In this regard there arises the need to search for effective work methods. I would like, therefore, to dwell on individual economic aspects of the resolution of the problem in the area of the use of secondary resources.

Secondary material resources, unlike primary ones, have a reverse correlation between supply and demand. Whereas for the primary resources the questions linked with reducing the shortage of individual types of raw and other materials and equipment can be resolved at USSR Gosplan, USSR Gosnab, and the ministries and departments, the secondary resources which are represented in the hundreds of millions of tons and which do not require any tremendous expenditures for their modification do not have any demand.

Then the specific aspects of bringing into economic circulation the waste products of production and consumption go into action. Those waste products are cheaper than primary ones. But when output is produced from secondary raw materials, the sales volumes fall. In addition, the indicators established in the plan for the processing of the waste products are, as it were, of secondary importance and with the conversion of most of the industrial enterprises to the new management methods they have become, in general, estimated. During recent years such waste-producing and waste-consuming branches as ferrous metallurgy, the lumber and paper branch, and the microbiology branch failed to fulfill the state assignments for use of the secondary raw materials and did not bear any responsibility for that. In other words, today the economic and administrative mechanism requires further improvement.

The time has come to change over more broadly to the formation of comprehensive material balance sheets for interchangeable types of primary and secondary raw materials, because, in essence, interchangeable types of primary and secondary resources are one and the same type. Therefore, when forming balance sheets and distribution plans it is necessary to guarantee the maximum use of secondary raw materials

V. Faltsman (doctor of economic sciences, professor, Institute of Economics and Forecasting of Scientific-Technical Progress, USSR Academy of Sciences). When developing the USSR Comprehensive Program for the next 20 years, special attention is being devoted to the problem of metal conservation in the investment complex. The resolution of that problem will determine not only the rates of the future growth of machine-building, but also the production of consumer goods and housing construction, which largely determine the possibilities of increasing the activity rate of the human factor.

What reserves does machine-building have at its disposal for reducing metal-intensity? The potential opportunities for reducing the expenditure of ferrous metals per unity of equipment productivity are currently estimated at 25-30 percent, and the increase in the coefficient of their use, from 0.74 to 0.9. That means that, if these opportunities were implemented, the metal-intensity of the output of machine-building will be reduced by approximately 40 percent, not considering any increase in prices. However, that would require the fundamental technical re-equipping of the entire investment complex. Special attention should be paid to increasing the share of the economical types of metal output, which increase should occur simultaneously with the improvement of the machine designs and the plans for capital construction, with the development of machine-building technological schemes with little or no waste products, and with major structural changes in the

pool of metal-working equipment. Otherwise there may arise a situation in which the consumer will not be ready to use alloyed steel, wide-flanged beams, and other progressive items. As has been shown by analysis, the actual saving of metal when progressive metal output is used proves to be one-third or more below the theoretical saving.

In order to realize the potential reserves for the economizing of metal, it is necessary to make more economical the existing versions of the technological schemes for metal conservation and metal production, and on that basis to choose the development priorities. For example, in conformity with branch forecasts, technical progress in casting production in the next 15-20 year is basically linked with the replacement of the existing capacities for the production of 2.4 million tons of castings by the traditional methods instead of producing precision castings. It is also planned to increase the smelting of cast iron in electric furnaces from 7 to 47 percent, corresponding reducing its production in cupola furnaces. All told, the application of these technological schemes with small amounts of waste products will make it possible to save approximately 1.9 million tons of metal. According to our computations, the implementation of these metal-saving measures will require approximately 7 billion rubles of capital investments, the assimilation of which will require two to three five-year plans.

It is also necessary to take into consideration the fact that, because of the high cost of equipment, the saving of one ton of metal by means of the use of technological schemes with small amounts of waste products is sometimes more expensive than its additional production in ferrous metallurgy. This circumstance must be carefully analyzed. It is not precluded that, as a result of this kind of analysis, some of the capital investments will be purposefully redistributed in favor of ferrous metallurgy.

An alternative for the distribution of capital investments that is deserving of attention is the one proposed by I. A. Budanov, when some of the additionally allocated capital investments are channeled into increasing the production of metal from secondary resources and they increase sharply, as a result of the accelerated withdrawal of obsolete fixed assets. At such time, the increase planned in ferrous metallurgy for the share of continuous smelting of steel from 14 to 45 percent or more will make it possible to free the steel-smelting capacities for the production of no less than 6 million tons of steel a year. The use of these capacities for the processing of depreciation scrap will make it possible to obtain 5 million tons of rolled metal without increasing the load placed upon the raw-materials base of ferrous metallurgy.

V. Grigoryev (general director of the Kazanrezinotekhnika Production Association). At enterprises in the industrial rubber industry the basic type of raw material -- synthetic rubber -- has to be freed from packing film and the cover and has to be cut into small pieces, that is, additional operations are required. The use of this processing to bring the raw material to the necessary quality specifications will lead to a considerable reduction in the losses, the amount of waste products, and the labor expenditures of the suppliers.

In the industrial rubber branch, approximately 2-3 percent of the raw material is expended to produce, in the course of the technological processes, the projections, trimmings, and rejects that are suitable for repeated use as an additive to the basic raw material when preparing the rubber mixtures. A technological scheme without waste products is not only economically, but also ecologically beneficial, inasmuch as there is no longer any need to burn the waste products, exerting a negative influence upon the environment.

Special attention should be devoted to increasing the efficiency of the structure of construction materials, structurals, and rolled ferrous and nonferrous metals, and to the releasing of them to the customers in conformity with specific variety lists and sizes, which can lead to a reduction in the formation of scrap metal.

In order to economize material resources it is necessary to achieve the further improvement of the existing statute governing the payment of bonuses, which statute is annually regulated by the superior organization. At the present time the size of the deductions for the payment of bonuses is limited to 10-25 percent, which is insufficient. For example, at our association a brigade engaged in the manufacture of metal-braid sleeves in 1985 economized rubber mixtures with a total value of 26,000 rubles and wire with a value of 59,000. According to the terms for payment of bonuses, the only saving that is taken into consideration is the saving of rubber with a value of 18,400 rubles, with a 10-percent deduction for incentive payments. The brigade as 147 persons. After saving 85,000 rubles a year, it will receive a bonus of 1843 rubles, that is, 10-15 rubles for each of its members, excluding the engineer-technical workers.

In order to increase material self-interestedness, it is necessary to authorize the enterprise managers, with the coordination of the trade-union committee, to use as much as 50 percent of the obtained saving of all types of material resources by removing the expenditures for the net costs of production. By means of these deductions it is desirable to create a separate fund for material incentives, for social-cultural measures, and housing construction, without tying its formation in with profit or the established fund-forming indicators.

A. Polyak (doctor of economic sciences, professor, MISiS). I would like to deal additionally with two aspects of the problem. One of them lies in the fact that one should not view secondary resources or the branch that produces them as something secondary. Practical life shows us that in a number of instances it is possible to use secondary resources to produce articles which you cannot produce from primary ones. These include, in particular, special aluminum alloys that are obtained in nonferrous metallurgy, which it is undesirable to produce in primary metallurgy.

The other aspect is linked with the improvement in the quality characteristics of the secondary resources, which must correspond to the quality level of the primary resources. Also, the prices must be established in such a way that the secondary resources, if they are of poorer quality, prove to be correspondingly cheaper for the customer. Unfortunately, this link between the prices and quality characteristics of the secondary resources has not been

achieved. Therefore, for the time being, secondary resources will not guarantee the consumer an economic benefit that is equivalent to the consumption of primary resources, and he will not have a self-interest in using them.

The present-day use of materials also requires the ever-increasing exertion of the effect of the economic mechanism upon it. It is well known that capital investments must be channeled primarily to where they guarantee the greatest benefit. This pertains also to the allocation of material resources, inasmuch as many of them are items in increased demand. For example, design plastics must be used not in general in a particular branch of machine-building, but for the production nonload-bearing, small parts of complicated configuration, where they can compete successfully with metal; another priority use for them is for various types of pipelines that operating at low pressures and temperatures, etc. Powders are most suitable for the production of articles from alloyed metals, and articles that operate under friction conditions; here the benefit from their application is the greatest. In our opinion, it is more effective to use aluminum for new types of transport, including the pipeline transport of freight; for high-speed trains; and for construction under conditions of the North.

The improvement of the economic mechanism in the field of material consumption presupposes the improvement of the measurements in physical terms. It is necessary to make the most rapid changeover to planning in metric terms for the production of steel pipes, individual types of sheet metal (for example, sheet iron); the expansion of the use of the indicator of standard tons in planning the rolling shops in ferrous metallurgy, the blank (sheet, forging and pressing) shops in machine-building, etc. In these instances, tonnage is preserved as a rated indicator that is necessary when allocating the funds, in planning the volume of shipments, and in other instances.

The saving of material resources is interrelated with the problems of improving the efficiency of the operation of transport. Factors that are taking on greater and greater importance are the reduction of the shipments, and the acceleration of the delivery of material resources. In particular, if one views the structure of freight shipments, it turns out that one-fourth of them are occupied by unqualified freight items: mineral construction materials. Obviously, as an important condition for increasing the effectiveness of material consumption in the country one should view not only the reduction of the distance for shipping the material resources and the elimination of countershipments, but also the improvement of the structure of shipments in the direction of increasing in that structure the percentage of the more valuable resources.

O. Tarnovskiy (senior scientific associate, doctor of economic sciences, IMSS, USSR Academy of Sciences). I would like to dwell on the methods of the broad involvement of secondary material resources in economic circulation in the CEMA member-countries. Some of them could also be used successfully in our own country, for example, the methods currently in effect in East Germany to assure the comprehensive coordination of the plans for resource conservation and scientific-technical progress. They have primacy among all the factor of economizing and the efficient use of fuel, energy, and raw and other

materials, inasmuch as their share is 70-80 percent of the volume of the saved resources. The high rate of results in mobilizing secondary resources (in East Germany, in the overall volume of material resources, the share of their value is 12 percent, and in the USSR, 3 percent), is largely determined by the fact that the plans for economizing energy and materials and for producing energy-saving machines are prepared, modified, and monitored by the combines (enterprises) jointly. There does not exist among them any methodological or organizational alienation that is very detrimental.

In Bulgaria, Hungary, and East Germany, since the second half of the 1970's, special national-economic programs have been drawn up for the recycling of secondary resources. For example, in East Germany, a special concept for using secondary raw materials has been in use since 1976. The general directors of the combines are given the responsibility of fulfilling the task of preparing their parts of that concept. The measures that evolve from the general concept and its component parts are included in the plans for the development of science and technology.

In East Germany, not only the industrial combine, but also the local people's councils are involved in collecting, grading, and shipping industrial ferrous-metal scrap. The increase in the role of the councils in economic life is based on their precise interrelationships with the combines. Both sides determine the scope of their specific duties. The people's council provides additional hoisting mechanisms, truck tractors, and liquid gas, and the combine provides for the training of the specialists in cutting, provides the technical equipment, mobile housing, etc. The interrelationships among the partners are based on principles of cost accountability: the partners coordinate the shares in the expenses and the profits from the sale of the metal waste products depending upon the real contribution made by each of them.

Recently in Hungary a practice that has become widespread is the practice of leasing acceptance stations of the MEX national procurement organization to private individuals (retirees, housewives, students, etc.). A network has been created, consisting of small workshops where the metal articles that are to be recycled are sorted and graded. Rural inhabitants are also involved in this work. A single system for payment of labor is in effect at these enterprises.

Experience that is deserving of attention is the experience of employing value levers in resource conservation, primarily for providing an incentive for the procurement and sale of secondary resources. For example, in enterprises in East Germany, 10 percent of the proceeds from the sale of ferrous scrap metal in excess of the plan is transferred to the bonus fund, and in construction organizations, 16 percent. The paying of bonuses to the workers depends upon the personal contribution made by each of them to the saving in excess of plan.

In Hungary and Poland, the wholesale prices of the final output manufactured with the use of secondary raw materials are established at the same rate as those of commodities made from primary raw materials, provided that final output has comparable consumer properties. The difference between the

wholesale price of final output and the production costs is transferred to the enterprise's income.

V. Kvint (sector chief, IE [Institute of Economics], USSR Academy of Sciences). One of the directions in the efficient use of material resources is the development of regional technological complexes.

The arising of regional technological complexes is the result of the interaction primarily of two natural laws underlying modern scientific-technical progress -- technologization and regionalization. The former is the result of the technical division of labor; the latter reflects its territorial division.

An example of the very productive regional complexes is provided by KATEK [Kansk-Achinsk Fuel-and-Energy Complex], where departmental separateness has been restraining the introduction of a chemical-energy technological scheme for processing brown coal, with the simultaneous obtaining of valuable chemical products. Unfortunately, the branch approach leads to the burning of that raw material, which is valuable for the chemical industry, and this, in its turn, leads to the pollution of the environment of the KATEK zone.

Today, in a number of regions throughout the country, and primarily in Dagestan and Kamchatka, problems of the creation of technological complexes on the basis of the use of the earth's plutonic heat are being studied. As a result of the nontransportability of the raw material, in these complexes it is important not to allow any narrowly departmental approach, because, on the basis of the geothermal resources, it is possible to create complexes that include a geothermal electric-power station and chemical-metallurgical production entities for extracting from the solutions rare-earth elements and other mineral raw materials. Simultaneously, all the nearby populated points can be converted to hot water supply and the creation of hothouse farms; the plutonic heat can be used to provide heated irrigation to the land and for fish farming. The brines from these springs are also a valuable balneological resource. However, we do not have a ministry or department that is self-interested in the complete use of these resources. Therefore only the regional approach to the creation of geothermal technological complexes will make it possible to use them most effectively from the positions of the national economy. A factor of great importance in forming and in organizing the functioning of the technological systems is the protection of the environment as a derivation of the problems of man's ecology.

N. Nikolayevskiy (doctor of economic sciences, professor, VNIIneft [All-Union Scientific-Research Institute of Petroleum and Gas]). The problem of resource conservation in the petroleum-extraction industry is one that exists on many levels. Not infrequently the search for use of the branch resources is limited to the sphere of the oilfield activity of enterprises that have already been creating and that are operating, within the confines of the accepted technological scheme for the development of petroleum (gas) deposits. Questions of the achievement of the optimal conditions and depth for petroleum extraction are an important factor in resource conservation, inasmuch as that determines the economizing of the labor and material-

technical resources and the capital investments, including the social infrastructure.

According to data provided by VKTEP and USSR Gosplan, thanks to the application of methods of exerting an artificial effect upon the petroleum seams from the moment of their exploitation on the scale of all the branches there have been created the most effective pressure (water-pressure, elastic water-pressure) modes for operating the seams, which modes have considerably increased the final petroleum return to the average take-off level of 43-47 percent of the reserves.

Of the various methods of exerting an effect upon the petroleum seams in order to increase the petroleum extraction (increase in current take-offs, increase in the final coefficient of petroleum yield), the ones that proved to be most successful were the two-stage systems of development with more sparse initial grids for the operational wells. This makes it possible, together with the extraction of petroleum, to carry out the additional prospecting of the area (inside the petroliferous contour), while keeping a reserve fund of wells.

Large variations in the final petroleum yield at petroleum deposits with various physical-geological parameters (for penetrability, porosity, nonhomogeneity of structure, viscosity of the petroleum, etc.) in the interval from 10 to 60 percent, and the increase, in the reserves balance sheet, of the share of deposits that are relatively unproductive and that are complicated with regard to their characteristics (deposits with worsened parameters) necessitates the broad application of thermal and chemical-physical methods of exerting an effect, which make it possible to increase the petroleum yield with high economic effectiveness.

The effectiveness of the resource-conserving principle with an increase in petroleum yield increases when there is more complete use of the potential of the efficiently selected technical means of extracting petroleum, especially with the mechanized exploitation of the wells and the organization of the entire oilfield complex with the elimination of losses from the inaction of the creative capacities (wells, electric motors, compressors, tractors, etc.). In addition, together with the extraction of petroleum, use will be made of gas, condensate, and other valuable components (vanadium, beryllium, titanium, etc.). The use of them to process high-viscosity varieties of petroleum with the application of thermal methods will increase the productivity and make it possible to build up the reserves of petroleum in the industrial categories.

Petroleum resources increase as there is an increase in their reserves that are discovered as a result of geological-prospecting operations and exploratory drilling, the effectiveness of which determines the future development of petroleum extraction in our country. The efficient proportions between prospecting and the extraction of petroleum in the branch and in the individual regions are taking on greater and greater importance.

Target Program for Minerals

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 4, Apr 86 pp 127-128

[Article: "The Efficient Use of Mineral Raw-Material Resources"]

[Text] A session of the Interdepartmental Commission for the Comprehensive Use of Mineral Raw Materials, under USSR Gosplan, which session was opened by commission chairman V. A. Vanchikov, USSR Gosplan deputy chairman, considered the question of the basic directions that the work of the commission would take in the long-term period until the year 2000. It was deemed desirable to improve planning and pricing in the country's mineral raw-materials complex, and to guarantee the coordination of the most important scientific-research, experimental-design, and experimental-industrial projects.

The session participants discussed the report by chief of the Environmental Protection Department, USSR Gosplan, V. A. Anikeev, which was devoted to the formation of a national-economic comprehensive target program (TsKP), entitled "The Efficient Use of Mineral Raw-Material Resources in the National Economy in 1986-1990 and the Period Until the Year 2000."

The chief task of the program is to increase the effectiveness of the use of mineral raw-material resources and the extracted mineral raw materials in the national economy on the basis of the following: the acceleration of scientific-technical progress in the branches carrying out the prospecting, extraction, and processing of mineral resources, as well as the intensification of production in the mining industry; the maximum economizing of the financial, labor, energy, and other expenditures per unit of output produced from the bowels of the earth; and the observance of the requirements with respect to the protection of the mineral wealth and the environment.

It is planned to resolve the assigned tasks on the basis of taking a comprehensive approach to the assimilation of the deposits of minerals and the time-responsive use of the achievements of scientific-technical progress with the aid of assignments in the State Plan for the Economic and Social Development of the USSR, which will guarantee the more complete satisfying of the needs of the national economy for mineral raw materials with the minimal expenditures of resources to be consumed, as well as the implementation of the necessary environmental-protection measures.

In order to fulfill the assignments in the program, the efforts of collectives from GKNT [State Committee for Science and Technology] and USSR Academy of Sciences, the ministries and branches that extract and process minerals, USSR Mingeo [Ministry of Geology], USSR Goskomsen [State Committee on Prices], USSR Gosgortekhnadzor [State Committee for Supervision of Safe Working Practice in Industry and for Mine Supervision], USSR Minvuz [Ministry of Higher and Secondary Specialized Education], and others are being united under the guidance of USSR Gosplan. The comprehensive target program that was considered substantially supplements the program that had been operating in the 11th Five-Year Plan, "Guaranteeing the Comprehensive Use of the Basic Types of Mineral Resources," and includes it in refined form as a component

part. As a result, the program coordinates into a single whole the scientific research and experimental-design and experimental-industrial projects with the introduction of the obtained results at specific, very large-scale enterprises that are already in operation or that are to be newly activated in the mining industry: a continuous chain is formed (science-plan-production), united by a single program.

The comprehensive program consists of two sections. The section entitled "Scientific-Technical Progress in the Assimilation of Mineral Raw-Material Resources" includes eight subprogram, and the section "Guaranteeing the Comprehensive Use of the Basic Types of Mineral Raw Materials" includes as subprograms assignments and measures for assimilating 16 very large deposits in the country which are represented by mineral fuels, ores of ferrous and nonferrous metals, as well as mineral-chemical raw materials. The selected sites for assimilation basically are of interbranch nature, since the confirmed reserves contain minerals and components that are on the products list for several branches. In addition, the second section contains a subprogram that stipulates the study of reserve deposits and the preparation of them for assimilation.

The first section of the program contains a series of very important scientific developments to be carried out under the scientific guidance of USSR Academy of Sciences (IPKON, USSR Academy of Sciences, has been designated the lead institute). By virtue of the branch approach to the assimilation of these sites by the ministries extracting and processing the mineral raw materials, the processing of all the confirmed reserves at sites of interbranch significance remains today a complicated organizational and financial program.

It has been stipulated that the subprograms constitute the basis of the section in the five-year plan entitled "Environmental Protection and the Efficient Use of Natural Resources."

The following persons took part in the discussion of the report: chairman of the State Commission for Useful Mineral Reserves, under USSR Council of Ministers, A. M. Bybochkin; chairman of the GNKT and USSR Academy of Sciences special-problem commission "USSR Natural Resources," USSR Academician M. I. Agoshkov; director of NIITSen (Scientific-Research Institute on Prices), USSR Goskomsen, V. I. Cheplanov; USSR Deputy Minister of Mingeo, V. M. Volkov; and laboratory director, Academy of the USSR National Economy, V. I. Danilov-Danilyan. Those who spoke mentioned the large and vital importance that the work being carried out has for the national economy and in general they approved the items presented in the report: the formation principles, the structure, and the initial assignments for development of the TsKP [comprehensive target program] subprograms.

Summing up the results of the discussion, V. A. Vanchikov mentioned the need for the acceleration of the organizational work for coordinating the scientific and production organizations in making the comprehensive use of the deposits of minerals and the protection of the mineral wealth, taking into consideration the compressed periods of time for preparing the draft of the plan for the 12th Five-Year Plan.

In the recommendations of the Interdepartmental Commission with regard to this question, it is deemed desirable to involve in the development and implementation of the comprehensive target program USSR Academy of Sciences, GKNT, USSR Goskomsen, USSR Gosgortekhnadzor, USSR Minvuz, the ministries in the industrial-mining branches, and other interested ministries and departments, and to request them to stipulate, during the formation of the drafts for the annual and five-year plans, assignments for their subordinate institutions and organizations for fulfilling the subprograms in the comprehensive target program.

Recommendations were also adopted with regard to the creation, in the ministries and departments heading the fulfillment of the subprograms, of agencies for guiding and monitoring their implementation. The monitoring of the implementation of the projects in the comprehensive target program is carried out by the Coordination Council, which is being created at the present time under USSR Gosplan. It was recommended that GKNT include in the appropriate assignments of the all-union scientific-technical programs the most important projects stipulated by the comprehensive target program.

Joint reports on the question "The Status of Developments of New Methods of Concentration and of Metallurgical Reduction of Mineral Raw Materials and the Introduction of Them Into the Practice of Industrial Mining Practice in the Period Until the Year 2000" were given by director of the Institute of Metallurgy imeni A. A. Baykov, USSR Academy of Sciences, USSR Academy of Sciences Corresponding Member A. I. Manokhin; laboratory chief at the same institute, V. A. Reznichenko; and director of the Mekahobr Institute, USSR Mintsvetmet [Ministry of Nonferrous Metallurgy], USSR Academy of Sciences Corresponding Member V. I. Revnivitsev.

It was noted, in particular, that the comprehensive use of mineral raw materials at the present time is one of the basic paths for the intensive development of our economy. It makes it possible not only to make more complete use of the mineral wealth, but also to reduce substantially the harmful effect that industrial-mining production has upon the environment. At the present time the comprehensive use of mineral raw materials yields a benefit of 1.7-1.8 billion rubles a year, and in the long-term view, assuming the introduction of the achievements of scientific-technical progress, without any fundamental change in the existing structure of industrial-mining production, it will reach 24 billion rubles.

The participants at the session analyzed the shortcomings of the technological processes being used at the present time for the concentration and metallurgical reduction of mineral raw materials, the equipment and agents being used, as well as the negative aspects in the administration of the country's mineral raw-material complex. Specific recommendations were formulated.

The recommendations of the Interdepartmental Commission basically approved the recommendations that were expressed during the discussion for creating new technological processes. It was deemed desirable to concentrate in 1986-1990 the scientific-research, planning-and-designing, and experimental-production

projects being carried out in various ministries and departments on the development and introduction of those new processes, in order subsequently to build model-progressive branch and interbranch concentration plants with a high technical level and labor productivity in ferrous and nonferrous metallurgy, the fuel-and-energy industry, and in chemical-mining production.

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REGIONAL DEVELOPMENT

CSA ECONOMISTS SEEK SOUND TPK DEVELOPMENT INDICATORS

Moscow VESTNIK STATISTIKI in Russian No 1, Jan 86 pp 28-32

[Article by L. Buyanova, candidate of economic sciences, senior scientific associate, Scientific-Research Institute of the USSR Central Statistical Administration, G. Oksenoyt, graduate student, and Z. Sonova, senior economist, Department of Consolidated Statistics and Statistical Methodology, USSR Statistical Administration: "System of Development Indicators for Regional Production Complexes"]

[Text] In the solution of the problem of improving the location of productive forces for the purpose of raising the efficiency of public production on the basis of further specialization and proportional development of the economy of union republics and economic regions in the country's unified national-economic complex, an important role is assigned to the formation and development of regional production complexes (TPK).

TPK are a combination of technologically and economically interrelated and proportionally developing production operations and enterprises subordinated to different ministries and departments concentrated in a limited region, utilizing its resources and a unified infrastructure" ("Metodicheskiye ukazaniya k razrabotke gosudarstvennykh planov ekonomicheskogo i sotsialnogo razvitiya SSSR" [Methodological Instructions for Working Out of State Plans of Economic and Social Development of the USSR]. Moscow, Ekonomika, 1980, p 740). This is a progressive form of regional organization of productive forces promoting an effective combination of sectorial and regional approaches to planning and management of the national economy.

Beginning with the 11th Five-Year Plan, TPK of union importance are designated as objects of planning in state plans of economic and social development. At the present time, there are eight regional production complexes of national-economic importance: West-Siberian, Kansk-Achinsk, Sayan, South-Yakut, Timan-Pechora, zones of the Kursk Magnetic Anomaly, Pavlodar-Ekibastuz, South-Tajik.

The importance of TPK in the country's economy is constantly growing. In this connection, the role of state statistics is enhanced in providing party, soviet and economic organs analytical data required for the solution of management problems of processes of TPK formation and development. For the purpose of raising the level of statistical tracking of these processes and

deepening of analytical elaborations, it would be necessary first of all to create a system of statistical indicators comprehensively characterizing the social and economic development of the complexes. The principles of its structure, composition of indicators and the program of statistical tracking are determined by the problems of planning and managing development of the complexes as well as by their specific character.

The indicator system must provide an analysis of the course and results of fulfillment of state plans for TPK economic and social development and the possibility of warning information as well as a reflection of the economic condition of the complexes from the position of their contribution to the solution of very important national-economic problems as well as analysis of the process of intensification of production and introduction of achievements of scientific and technical progress, developed intersectorial and intrasectorial proportions, the living standard of the population and factors and reserves of economic growth.

In 1985, the USSR Central Statistical Administration approved a general system for all TPK (without dependence on their specialization, stage of formation and the like) of statistical indicators of their social and economic development worked out by the Scientific-Research Institute of the USSR Central Statistical Administration together with the Department of Consolidated Statistics and Statistical Methodology of the USSR Central Statistical Administration. In analysis of the development of concrete complexes, their refinement is required, taking into account their specific characteristics.

The system of social and economic development indicators for regional production complexes is essentially based on existing statistical TPK reporting and contains the following blocks:

- I. Development of physical-production sectors.
- II. Fixed capital and capital investment.
- III. Use of natural resources and protection of the environment.
- IV. Use of manpower resources.
- V. The population's living standard.
- VI. Development level and effectiveness of the economy.

A most important task of TPK statistical study is evaluation of the development level and effectiveness of functioning of complexes on the basis of block VI indicators (labor productivity, yield on capital and materials intensiveness of TPK sectors, effectiveness of capital investment and others) as a consequence of their comparison with corresponding plans, normative and average characteristics for sectors and other regions. A comparison of indicators in this aspect also makes it possible to evaluate reserves of economic growth of complexes from national-economic positions.

The principal resultant TPK development characteristics are indicators of the production output of specialized sectors of the complexes (block I).

In analysis of TPK development, indicators of the presence and use of production capacities and manpower resources serve as indicators--existence and turnover of personnel, worktime losses and others (in accordance with blocks II and IV).

Indicators of the capital-labor ratio, energy- and electricity-labor ratio as well as indicators of the relation of the presence and existence of production capacities and manpower resources characterizing their balance form an independent group of factors connected with growth of production output.

For industry, indicators of production output (volume of commodity and sold production as well as the production of basic types of products in physical terms--block I) are worked out in the context of those ministries and departments to which enterprises located on the territory of the TPK are subordinated. For the West-Siberian, Kansk-Achinsk, Sayan and South-Yakut TPK there are in addition individual associations and enterprises belonging to ministries and departments. Indicators of the size of industrial-production personnel (block IV) and the production output of a single worker (block VI) are worked out in a similar manner. Data on turnover of worker cadres and losses of worktime (block IV) are presented in the context of ministries and departments and data on the use of operative and assimilation of planned capacities (block II)--for individual enterprises according to types of products presented in the state plan.

The startup of corresponding production capacities and fixed capital exerts a decisive influence on production-output growth of physical-production sectors. Fulfillment of plans relating to their startup is determined by the volume and structure of allocated capital investment and operation of contracting construction organizations, which is characterized by the indicators of the volume of construction and installations work, assimilation of the capital-investment limit and changes in the volume of unfinished construction (also comes under block I). Operational results in turn depend on the availability and use of the production capacities of construction organizations, mechanization of labor and personnel turnover in construction, the development level of own construction base of regions, timeliness of deliveries and others.

Determination of the interrelation of the indicated processes on the basis of the enumerated indicators of blocks I, II and IV occupies a central place in the study of TPK development.

At the present time, special importance is also to be attached to analysis on the basis of indicators of block II of the correlation of startup of capacities through the means of modernization and reequipment and through the means of new construction and expansion of existing enterprises. This correlation is a reflection of the process of intensification of TPK production.

In analysis of balance in the development of complexes, major importance is to be attached to the study of correlation between the startup of facilities of production and nonproduction designation as well as proportions between corresponding capital-investment volume.

For capital construction, indicators of the volume of capital investment (block II), construction and installation work (block I), unfinished construction (block I) and startup of production capacities and fixed capital (block II) are worked out in cost terms in the context of ministries shown in the consolidated capital-construction plan for TPK and for facilities of production and nonproduction designation; data on the startup of production capacities and fixed capital in physical terms (block II) in the context of ministries as well as for individual facilities, including with showing of startup because of the construction of new and expansion of existing enterprises and because of modernization and reequipment; capital-investment indicators in housing construction and opening up of total (dwelling) space of residential buildings (block II)--in the context of those ministries for whom targets were set in the consolidated capital-construction plan for TPK. Data are similarly worked out on the startup of facilities of cultural designation (block II). Data on cadre turnover and worktime losses (block IV) are worked out in the context of ministries just as for industry.

The timely startup of production facilities affects not only production-output growth of sectors of specialization of complexes but also ensures proportional development of transport and the production infrastructure, related and supplementary (auxiliary) production facilities.

The development level of transport, communications and material and technical supply, characterized by indicators included in block I (freight turnover of all types of transport, volume of freight hauls and delivery of individual types of products to the consumer and others) exerts a great influence on the balance and functioning of all TPK sectors. A developed transport network is in turn a significant factor in regularity of deliveries of material and technical resources, fulfillment of capital-construction plans and so forth.

The general direction and character of TPK production is determined by natural and climatic conditions and availability and extent of exploration of mineral resources. Indicators of this as well as outlays on measures for protection of the environment included in block III are important characteristics of the level and developmental prospects of the complexes.

In analysis of the latter, indicators of the living standard of a given region's population (block V) deserve special attention. These are indicators of trade and public dining (total volume of retail trade turnover of state and cooperative trade, including public dining per capita, trade area of stores per 1,000 inhabitants, the number of seats in public-dining enterprises per 1,000 persons); availability to the population of dwelling space and housing and municipal services, level of amenities of available housing for TPK (average available housing space per inhabitant, the relative share of housing space equipped with gas, central heating, water-supply system and others); development of health care (number of hospital institutions, number of medical institutions providing out-patient and polyclinic assistance to the

population, number of physicians of all specialties and number of hospital beds per 1,000 persons of the population); development of educational and cultural institutions (number of permanent preschool institutions and the number of children in them, number of general-educational schools and secondary specialized educational institutions and number of pupils in them, number of large-scale libraries, club institutions and motion-picture projectors and others) as well as indicators of monetary income and expenditures of the population. In analysis of the living standard of the population of TPK, a major role is played by study of the consumption structure of principal food products, material benefits and services in a comparison with corresponding average indicators for the country and rational norms. The enumerated indicators are worked out for TPK within the context of cities and residential areas.

The rising living standard of the population contributes to reduction of personnel turnover in sectors of the production and nonproduction sphere of TPK operation.

Interrelations of the indicators included in the system reflect real relationships in the TPK functioning process. Their statistical study can be done with methods of traditional factor index analysis investigating calculated, functional relationships between indicators and on the basis of the structure of econometric-statistical models of TPK production reflecting stochastic relations. For the construction of the said models and calculation of the statistical characteristics of the relationship (correlation coefficients, measures of proximity and others), there can be used both data of statistical reporting, balance developments and one-time censuses and surveys and the results of index analysis. For ensuring adequacy of models, a preliminary breakdown of the initial aggregate of facilities into homogeneous groups using methods of multiple groupings, cluster analysis and others as well as the study of the initial selection of features--individually based on resultant and factorial characteristics by means of factor analysis methods. The possibilities of using these or those methods of analysis and construction of models significantly depend on the character of information, aims and objectives of the investigation.

Due to the need of complex analysis of TPK social and economic development provision of planning and management organs with corresponding analytical information, attainment of unity of methodology of elaboration and comparability of all indicators of sectorial statistics included in the studied system and the realization of a unified program of statistical observation over the development of TPK are most important tasks. They require development of statistical reporting with respect to obtaining additional information for the comprehensive study of operation of complexes.

Difficulties of organization in collection, processing and analysis of information (including supplementary information) relating to TPK are due to a significant degree to the noncorrespondence of the established boundaries of the complexes and the boundaries of administrative regions (oblasts, krais and so on).

The chief direction of improving consolidated statistical reporting for the TPK should involve fuller use of data of primary statistical reporting rather than the elaboration and inclusion of new indicators in it.

At the same time, statistical reporting relating to TPK must contain information on the type and age structure of fixed capital, mechanization and automation of production processes and introduction into production of achievements of scientific and technical progress. In our opinion, elaboration in reporting data of introduction of progressive forms of labor organization and remuneration and securing for production cadres of qualified workers and specialists, acquisition of additional information on the level and causes of personnel turnover and worktime losses from the point of view of TPK enterprises and organizations on whose basis data on production output are presented in consolidated statistical reporting and so on would be useful.

Data on startup of production capacities and fixed capital because of modernization and reequipment as well as construction of new and expansion of existing enterprises require detailed itemizing. Data are necessary on the operation of contracting construction organizations.

For analysis of interaction of economic and social processes of TPK development, the presentation in consolidated reporting of data on capital investment and startup of capacities for facilities of nonproduction designation from the point of view of cities and populated areas located on the territory of the TPK on whose basis indicators of social development of complexes are worked out is of great importance.

For the study of the economic mechanism of functioning of complexes, indicators of finance and price statistics are needed. Deepening of the analysis of TPK operation requires acquisition of additional information for the compilation of intersectorial balances making it possible to provide a characterization of the most important proportions of TPK production.

In our view, it would be worthwhile to present in consolidated reporting data on the natural and mechanical movement of the population, structure of the monetary income, expenditures of the population and other data characterizing the population's living standard. In carrying out different kinds of one-time accounting, censuses and selective surveys, it is necessary to aim at obtaining information making it possible to comprehensively study the interrelations of the process of TPK social and economic development. Improvement of the system of economic norms and normatives (on the national-economic level) as well as formation of a basis for comparisons in the sectorial and regional frameworks.

The need exists on the agenda of effectively solving problems facing statistics relating to the collection, processing and analysis of information relating to TPK and forecasting the course of their economic development. For this reason, development on the basis of creation of a corresponding data bank of the analytical complex relating to TPK, making it possible to carry out (under regulated and information-reference conditions) an analysis, forecast and simulated modeling of the development of regional production complexes, is urgent.

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REGIONAL DEVELOPMENT

GOSPLAN OFFICIALS CITE REGIONAL INFRASTRUCTURE FLAWS

Moscow PLANOVoyE KHOZYAYSTVO in Russian No 4, Apr 86 pp 101-105

[Article by N. Zenchenko, head of the department of the Council for the Study of Productive Resources within USSR Gosplan, and V. Kotilko, senior scientific worker: "Regional Problems of the Basic Infrastructure"]

[Text] The basic infrastructure is an important factor for raising the efficiency of social production.

* An analysis of the reasons for the absence of the necessary correlation of the branches of material production and of the basic infrastructure.

* The inclusion of indicators of the basic infrastructure in a combined section of a plan and methods for calculating them.

* The criteria for the efficiency of the basic infrastructure.

The growth of the scopes of the national economy and the complication of interdependencies between regions demand a significant improvement of the operation of all branches connected with servicing material production and the nonproductive sphere, i.e., the basic infrastructure. The need to develop comprehensively the branches of the basic infrastructure, and to satisfy opportunely and qualitatively the needs of the national economy and population for transportation and other types of services, has been emphasized in the Basic Directions of the Economic and Social Development of the USSR for 1986-1990 and for the Period up to the Year 2000 confirmed by the 27th CPSU Congress.

The improvement of the development of this group of branches is inseparably connected with the course for the intensification of the economy and for the acceleration of scientific and technical progress in all links of the country's unified national economic system.

M. S. Gorbachev emphasized the following in his report at the 27th CPSU Congress: "The party is conferring enormous importance to the technical re-equipment of the basic infrastructure, and first of all to transport and communications."*

The basic infrastructure is the connecting link between production and consumption. It is as if it continues the production process in the sphere of circulation (storage, transport, the transfer of information, etc.), and affects the speed of circulation, the structure and growth rates of basic production, the social infrastructure, the saving of mental and physical labor and embodied labor, and consequently the final results of the functioning of the country's entire national economy. In 1984, approximately one-fifth of all fixed capital, capital investments and the number of people engaged in the national economy fell to the share of the basic link of the basic infrastructure, which includes all types of transport, the roads department, the communications system, the supply of materials and equipment, warehousing, trade and the procurements system.

However, it is impossible to call the ratios of the distribution of the infrastructure for the country's territory optimal; the share of the eastern regions is growing slowly, and losses due to irrational transportation and the poor custody of output (coal, cement, potatoes, vegetables, fruits and others) are increasing.

The basic infrastructure affects such national economic and territorial ratios as the relationship between material production and the nonproductive sphere, basic production and the basic and social infrastructure, the extractive and processing branches, the nonproductive sphere and the branches which serve it, and agriculture and its infrastructure.

The effect of the basic infrastructure on all the links of the unified national economic system have particularly grown now when the goal has been set for a transition to a primarily intensive type of development of the economy on the basis of the efficient use of the potential which has been created and of the introduction of the achievements of scientific and technological progress.

Great attention was given to this problem at the 27th CPSU Congress. The following is stated in the new edition of the CPSU Program: "The party is assigning an important role to technical re-equipment and to increasing the efficiency of the

* PRAVDA, 1986, 26 February.

operation of all branches of the basic infrastructure in the improvement of the country's unified national economic system."*

The formation of systems of electricity, oil and gas supply, communications and providing information, the development of the supply of materials and equipment, the satisfaction of packing requirements primarily through the production ahead of schedule of economical conditions, unification, standardization and its repeated utilization will be of crucial importance. Special attention should be given to the creation of a unified transport system, to the improvement of all of its links, and to the wider employment of progressive types of transport (conveyer, pneumatic container, hydraulic and others) in the ore-mining and chemical industry, and in the building materials industry. An increase of the productivity of gas pipelines and the automation of pumping stations promotes the efficiency of the functioning of the entire fuel and power complex. The use of containers and modern loading and unloading mechanisms in transport and the introduction of new, progressive equipment in warehousing reduce losses during the storage and transport of output and increase the efficiency of the agro-industrial complex. The efficiency, smoothness and stability of managing the nationaleconomy depend on the operational efficiency and reliability of the means of communication.

The following are becoming more and more urgent in modern conditions: the substantiation of the tempos and ratios of the development of basic and infrastructure branches; the determination of the quotas of relationships for their further growth; a restructuring of investment and structural policy in basic and infrastructure branches; a fuller utilization of all types of resources (labor, energy, raw materials, materials, equipment, production capacities); the building up of the economic potential of eastern regions; the assimilation of natural resources; and the development of fuel and power and raw material bases in Siberia and Kazakhstan.

Our country is devoting enormous resources to the development of the leading branches of material production. Hundreds of new enterprises are being put into operation annually, and the production capacities of plants and factories are growing due to their reconstruction and modernization. However, a balancing between the branches of material production and of the basic infrastructure is not always being achieved, since a large portion of questions connected with it is being solved in the branch ministries. The disturbance of the ratios of the

* PRAVDA, 1986, 26 February.

development of material production and of the basic infrastructure has affected the economy of the entire country. Losses in all phases of the reproduction process have grown sharply due to shortcomings in the forming and distribution of the infrastructure potential. According to some assessments, their magnitude in terms of cost has exceeded the amounts of capital investments allotted to leading branches of the basic infrastructure.

Beginning with the 5th Five-Year Plan, the growth rates of fixed productive capital and of basic infrastructure capital began to converge. The transport infrastructure also was improved (transport junctions have been expanded, and station facilities, ports, airports, railway stations and others have been developed). The reconstruction of station facilities has been conducted primarily on the roads of the European part of the USSR, and in Kazakhstan, Western Siberia and the Urals. New railroads have been built in Siberia, the Urals, Kazakhstan, and Central Asia, and this had a considerable effect on the development of adjoining territories; and the transport conditions of regions of virgin soil and disused lands have been improved. At the end of the 1950's, the USSR held first place in the world in the tempos of electrification and in the extent of electrified railroad lines. But the country still has not been able to allocate enough resources for the harmonious development of all the links of the national economy. Therefore, despite the fact that the growth rates of the fixed capital of material production and of the fixed capital of the basic infrastructure had equalized by the middle of the 1970's, there has not been a balancing between basic production and the infrastructure. The growth rates of the basic infrastructure continue to lag behind the development of basic production branches. For example, if there were 0.6 and 1.3 rubles respectively for one ruble of fixed capital of industry and agriculture in the 1960's, then they were only 0.54 and 1.26 in the 1980's.

In order to determine the trends for the development of the ratios of the basic infrastructure, the change of the relationships between the basic infrastructure and industry and agriculture has been examined for the 1960's, 1970's and 1980's for the country as a whole and broken down into all the union republics. The analysis has indicated shifts in favor of the branches of the infrastructure (see the Table).

Broken down into regions, these ratios differ sharply and fluctuate between 1:1.1 in Turkmen SSR and 1:4.4 in Tajik SSR. At the same time, two trends have been formed. The first ratio corresponds to the average union ratio; the ratios are changing in favor of the basic infrastructure (RSFSR, Baltic republics, Transcaucasia, Kirghiz SSR, Turkmen SSR, Moldavian

SSR). The second ratio is the opposite of the average union ratio; the distribution of capital investments between the basic infrastructure and industry is changing in favor of industry (UkSSR, Tajik SSR, Kazakh SSR, BSSR). A ratio of 1:2.2 has been maintained in Uzbek SSR for this period.

(Basic Infrastructure = 1)

For Five-Year Plans

5th (1951-1955); 6th (1956-1960)	7th (1959- 1965)	10th (1976- 1980)	11th (1981- 1985)
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Ratios:

Basic infrastructure to industry.....	1:3.0	1:2.7	1:2.4	1:2.3- 2.4
Basic infrastructure to agriculture.....	1:0.6	1:0.67	1:0.97	1:1.2- 1.3
Basic infrastructure to industry and agriculture as a whole	1:3.6	1:3.4	1:3.4	1:3.5- 3.7

Similar ratios have also arisen between the basic infrastructure and agriculture. They were 1:0.97 in the 10th Five-Year Plan (as opposed to 1:0.67 in the 7th Five-Year Plan), i.e., this ratio is gradually changing in favor of an increase of investments in agriculture for the country as a whole. Broken down into regions, this ratio will fluctuate from 1:0.7 in UkSSR to 1:3 in Uzbek SSR. At the same time, the trends discovered for the change of this relationship are being maintained in all the union republics (except in Turkmen SSR and Latvian SSR).

Calculations indicate that in order to have a balanced development of basic production and the infrastructure, it is necessary to change the relationship of these ratios in favor of the latter. They should be approximately 1:2.2-2.4 with respect to industry, and 1:1.0-1.1 with respect to agriculture.

The relative stability of the relationships discovered, and the clearly expressed trend of their change for a long period of time, point to the need to substantiate the ratios of the development of the infrastructure in regional pre-plan

documents, and also to take them into account in the system of territorial planning. Special attention should be given to substantiating the ratios between production and the infrastructure broken down into regions.

The weak development of the basic infrastructure is also connected with shortcomings in the organization of its planning. To a significant degree, this is the result of the use of branch methods of planning and of a number of negative aspects inherent in the system of pre-plan documents, in plan indicators and in the structure of plans. At the same time, it is not always taken into account during the planning of the basic infrastructure that the effect from the functioning of its units is shown not so much in its branches, as through basic production.

Branch and territorial planning of the basic infrastructure require a complex approach. However, if branch planning is aimed at the rational development of every branch separately in accordance with inter-branch demands of the entire national economy, then territorial planning should create general conditions for the overall development of the economy within the framework of individual regions. In the end, the improvement of the infrastructure should be aimed at increasing labor productivity. It is only in these conditions that an optimal combination of branch and territorial planning will make it possible to implement a complex approach to the planning of capital investments in the basic infrastructure.

At the present time the inter-branch system of the basic infrastructure is not singled out as an independent body either in the branch or the territorial aspects of planning (with the exception of transport and the means of communication, which have appropriate sections both in the national economic and the territorial plans). The basic infrastructure complex does not have even one combined indicator at its disposal in the operating system of plans. There are no indicators which characterize the growth rates, ratios, level and degree of the development of this complex, and which are oriented towards satisfying the needs of the country and its regions for the development and distribution of the fixed capital of the basic infrastructure. In the end, their absence engenders a parochial approach in the construction of general economic projects, and this reduces the effectiveness of capital investments and labor productivity, and leads to economic losses. As a result, the existing disproportions are becoming more profound and new ones are arising in the economy of one or another region. This is also the consequence of the weakness of the information base and of the system of documents that are used in working out the territorial aspects

of a plan, and of the absence of a combined accounting for the basic infrastructure and of appropriate methodological elaborations for problems connected with its development in pre-plan documents earmarked for territorial planning. Meanwhile, the justification of established regional ratios greatly depends exactly on the correct posing of a question in the pre-planning, prognostic stage.

The system of regional pre-planning studies now does not arm the workers of planning organs with methodological tools which make it possible to evaluate the development of the basic infrastructure and to determine the existing disproportions and ways of overcoming them. At the same time, long-term and approximate amounts of capital investments, which are necessary for the development of the entire complex of the basic infrastructure, are not reflected in pre-plan elaborations, and the optimal ratios of their distribution in the union republics and economic regions are not substantiated. The properties and outlooks of the economy of a region from the point of view of the type of development of the basic infrastructure (on schedule, ahead of schedule, behind schedule) are not being studied in regional programs.

The existing methods proceed from the fact that the projects of the basic infrastructure are taken into consideration primarily in the branch sections of the national economic plan during the planning of capital construction, transport, the roads department, communications, warehousing, farming and water utilization. Only those indicators of the infrastructure characterizing the development of projects administered by the Councils of Ministers of union republics are indicated in territorial plans. Indicators reflecting growth rates, ratios and the level of the development of the system of the country's basic infrastructure, and of its regions, are also absent here.

In modern conditions, the plan for an economy administered by the Councils of Ministers of union republics, being a constituent part of the system of territorial plans, to a great extent meets the requirements of the branch system of planning and of the departmental breakdown of a plan by its very structure and the qualitative formulation of its indicators. As a result, the problems of the development of the basic infrastructure are solved incompletely and in isolation, and as the sum of a few combined indicators.

Indicators which directly or indirectly characterize the regional fixed capital of the basic infrastructure are reflected only in sections of a plan: "Transport and Communications," "Capital Construction," "The Development of Science and Technology." The most general plan indicators for the development of transport (river and motor vehicle) and

communications are presented in the "Transport and Communications" section of a territorial plan, since their basic enumeration has been indicated in the branch national economic plan. So, if only one indicator of motor vehicle transport--the motor vehicle transport traffic in general use--is presented in a territorial plan, then more than 240 indicators are presented in the branch plan. A quite complete enumeration of indicators of the introduction into operation of regional projects of the basic infrastructure is given in the "Capital Construction" section, as well as the cost indicators of the introduction into operation of fixed capital and state capital investments (including construction and installation operations), and the indicator of the "transport of petroleum and petroleum products and the provision of the national economy with petroleum products." The plan indicators for the putting into operation of basic infrastructure projects are represented by the indicators of the infrastructure of the agro-industrial complex, water utilization, transport and the means of communication, and also of new elements of the infrastructure or of the technical provision of labor.

Territorial plan indicators of the basic infrastructure still do not represent a complete system. The grouping of them into sections should proceed, on the one hand, from the social division of labor, relying on the structure of the national economy taking shape, and on the other hand from the integration processes leading to the union of individual branches and regional links into complexes.

It appears that the experience of working out a combined section of a plan for an entire set of measures in the area of social development should be used in order to create generalized characteristics of the basic infrastructure. Its indicators are grouped into corresponding subsections: the number and composition of the population, its incomes and expenditures, trade turnover and public demand, the social and cultural, domestic, trade and transport services, and environmental conservation. The section includes targets and calculations which are determined not only by central managerial organs, but also directly by enterprises, organizations and local Soviets. In the RSFSR, for example, 216 indicators for the republic's economy are included in the combined section of the plan for measures in the area of social development, and 180 indicators for autonomous republics, krais and oblasts. This method of planning has been adopted in the working out of targets for the union republics, ministries and departments in the Overall Program for the Development of Consumer Goods Production and the Service Sphere for 1986-2000. It is envisaged in the special section to determine the targets for consumer goods production in retail prices,

for the output of basic types of them in a natural form, and for the volumes of retail trade turnover and the carrying out of paid services to the population, and the limits of state capital investments and volumes of deliveries of basic types of material-technical resources. This experience should be used during the planning of the development of the basic infrastructure. In the corresponding combined section, it would be possible to establish for the ministries, departments and union republics the targets for production volumes and for carrying out production services in a monetary and natural form, and to establish the limits of state capital investments for the basic infrastructure and the volumes of supplies of basic types of material-technical resources.

In our opinion, for analytical purposes and inter-regional comparisons it is possible to calculate the fixed capital of the basic infrastructure as relative indicators for the overall volume of the fixed capital of material production and for the number of people engaged in material production branches, for each 1000 km² of economically active territory, for the number of inhabitants of various groups of cities and for each 1000 hectares of arable land; for the global social product, the national income, and the net output of industry and agriculture (in the sum total and taken separately); and as the national income for capital investments selected for the development of the basic infrastructure (and vice versa).

At the same time it is possible to use such an indicator as the share of the basic infrastructure in the regional and branch structure of the country (for fixed capital, capital investments, the number of people employed, the global social product and the national income) and others.

Such a calculation would make it possible to conduct a rough inter-regional analysis of the development of the basic infrastructure even in the pre-planning stage of the working out of territorial plans, to discover the dependencies of infrastructure development on the leading branches of material production (industry, agriculture) and on capital construction, and also to foresee corresponding tempos of the development of transport, communications, material and technical supply bases, and information systems.

The planning of the basic infrastructure, on both the national economic level and on the level of largescale regions, should be organically connected with problems concerning the rational distribution of productive forces. The creation of the basic infrastructure is incorporated in plans for the development of material production branches, and that of the social infrastructure is incorporated in plans for the development of

branches and in plans for the economic and social development of union and autonomous republics, krais and oblasts. In order to solve successfully the problems of basic production and the infrastructure, their planning and realization in large-scale territorial-production, fuel and power and agro-industrial complexes is assuming ever greater importance.

The planning of the infrastructure for servicing the agro-industrial complex with the sphere of services connected with the production of agricultural products and their transport and storage, and with the primary processing of output (material and technical supply; the repairing of tractors, agricultural machinery and means of transport; the construction of roads, elevators, refrigerators, and warehouses), demands a serious reorganization.

It is essential to eliminate the disproportions between the increase of the production of agricultural products and the growth of enterprises' capacities for their processing. For example, the food-canning industry only processes about 12 percent of vegetables and 20 percent of fruits. Meanwhile, about 50 percent should be consumed in a processed form for a rational utilization of fruit and vegetable output and for supplying the population with it year round (canned foods, juices, freshly frozen vegetables and fruits).

The growth of the effect of the infrastructure on the growth rates of the national economy makes the determination of its efficiency essential. However, until now the problems of evaluating its efficiency have only been discussed and solved inadequately. The basic shortcoming of the evaluations being used is the failure to take into account adequately losses due to the poor condition of infrastructure units. The branch methods for calculating efficiency do not take into account the inter-branch, or so-called "extra-infrastructure effect." A consideration of it indicates that in many cases it is more profitable economically to invest resources in the enterprises of the infrastructure than in the construction of new projects, i.e., one should talk about the commensurability of the size of losses due to the lack of the development of the infrastructure with expenditures on measures for their prevention. Thus, in regard to methods, a definite shift is needed from the purely branch methods for evaluating efficiency to taking into account the fact that a reduction of losses, or a growth of national income, net output or profit which have been achieved due to these inputs, can be the criterion for the economic effectiveness of the capital investments of the infrastructure.

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